MAS - 1977 ANNUAL PRESENTATION

INPUT

ABOUT INPUT

Formed in 1974, INPUT has rapidly grown to become a leading business consulting company in the information processing industry. It specializes in market research, planning services, and special analyses for users and vendors of computer, and communications, and office products and services.

The company carries out continuous and in-depth research with vendors and users in the industry. Our staff analyze and interpret the complex and voluminous data derived from this research, based on their experience and the needs of clients. This information is presented concisely and understandably through reports and presentations. Useful recommendations and access to back-up data are strong points of our client relations.

INPUT's professional staff have, on average, nearly 20 years experience in the information processing industry. Most have had senior management experience in operations, marketing, or planning roles. This expertise provides INPUT with unique strengths attested to by the company's client base, which includes many of the world's largest companies.

OFFICES

UNITED STATES

2180 Sand Hill Road
Menlo Park, CA 94025
(415) 854-3422

15 Bond Street
Great Neck, NY 11021
(516) 482-4170

EUROPE

67A High Street
Sutton
Surrey SM1 1DT
England

JAPAN

Overseas Data Service Company, Ltd.
Shugetsu Building, No. 12-7 Kita Aoyama
3-Chome Minato-Ku
Tokyo, 107
Japan
(03) 400-7090

MARKET ANALYSIS SERVICE

ANNUAL PRESENTATION

1977

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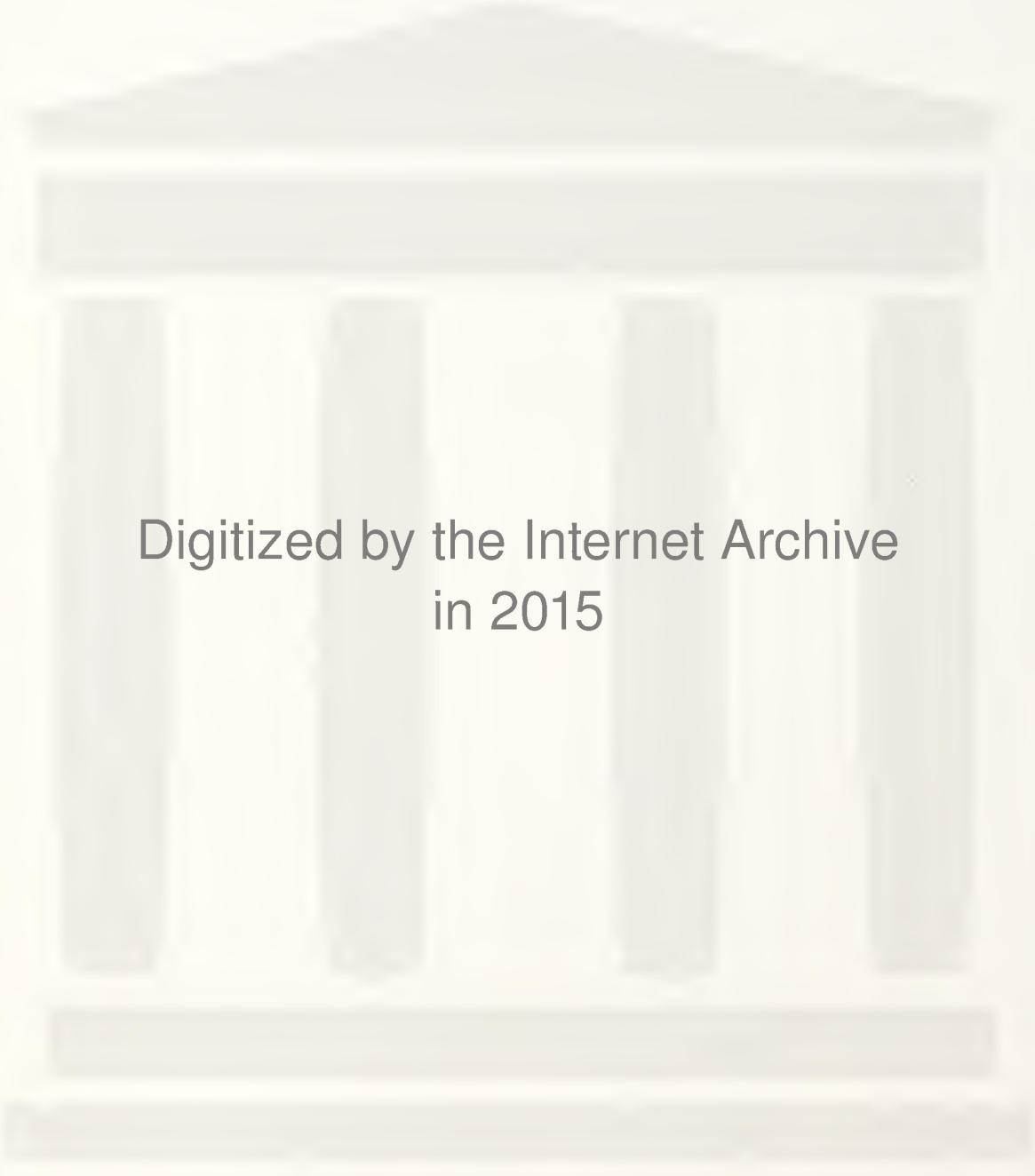
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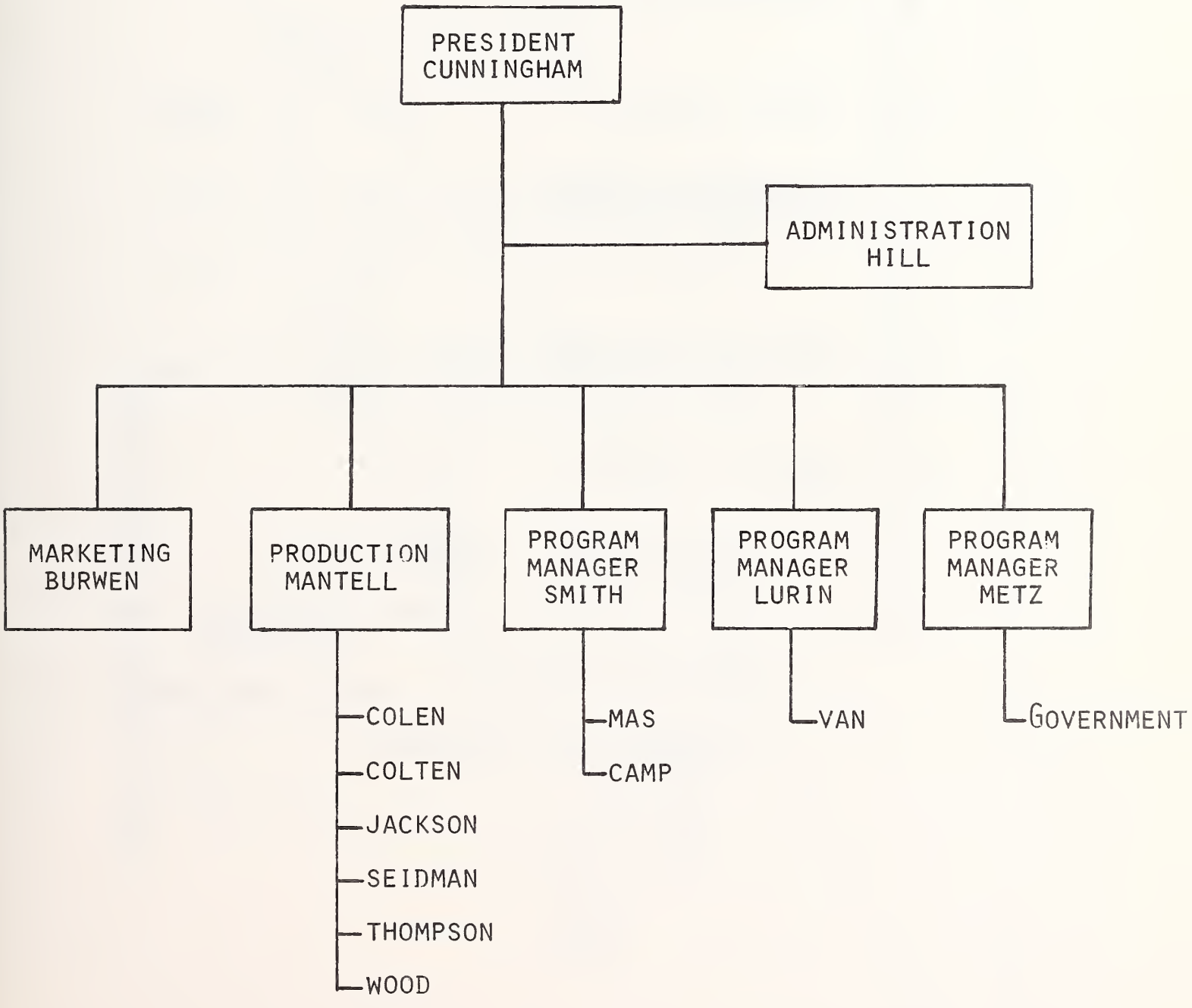
I. INTRODUCTION: INPUT IN 1977

INPUT ORGANIZATION



- ALL INVOLVED IN MAS

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INPUT DEVELOPMENTS 1976/77

- EASTERN OFFICE OPENED
- PEOPLE GROWTH:

	1976	1977
- PROFESSIONALS	6	13
- TOTAL	8	21

- ANNUALIZED REVENUES $300,000 $1 MILLION
- QUALITY OF PEOPLE:
  - BROADER BASE; COMMUNICATIONS, OFFICE SYSTEMS, ECONOMICS
  - INDUSTRY EXPERIENCE; REMOTE COMPUTING SERVICES, IBM, BURROUGHS

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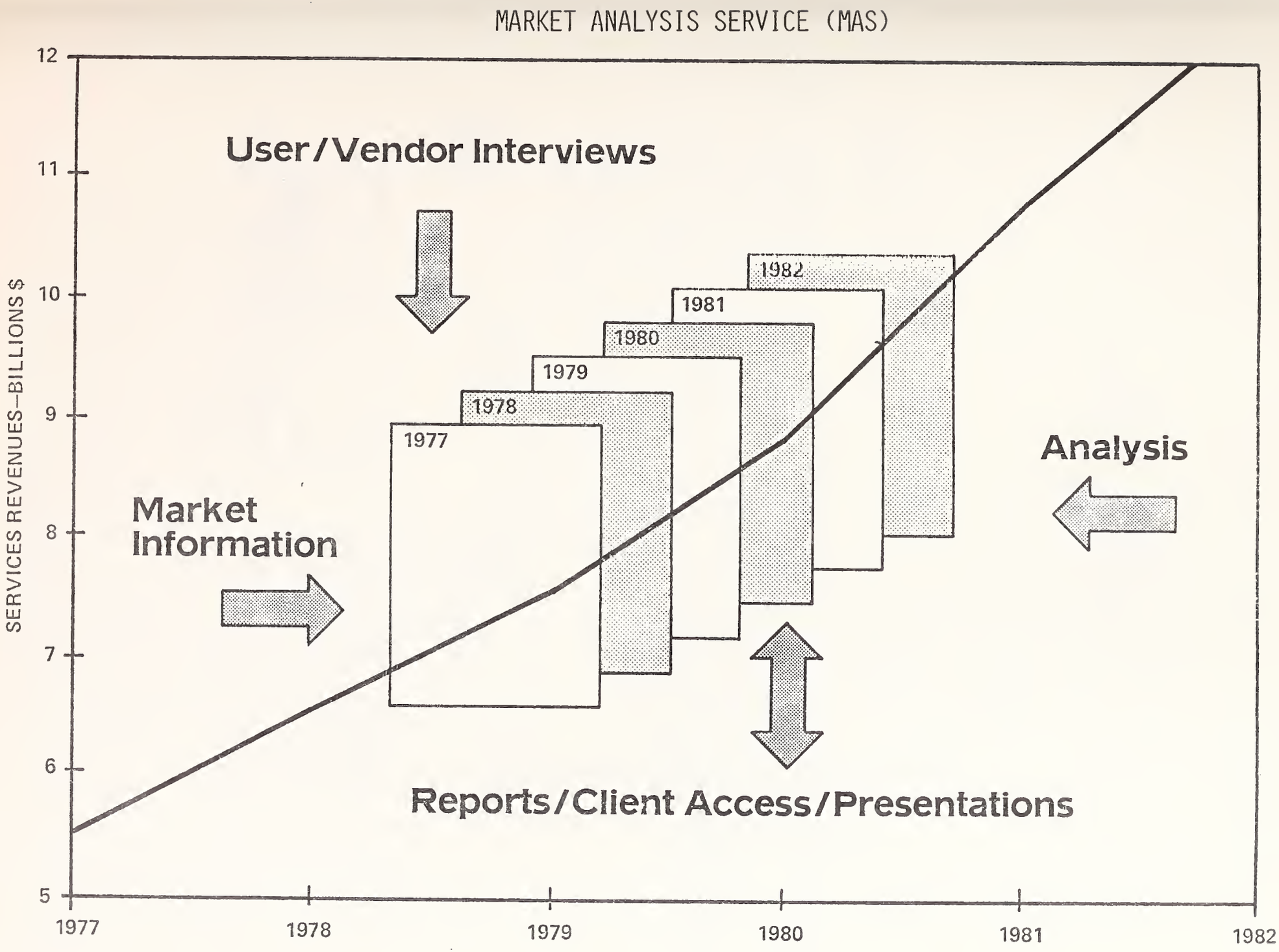

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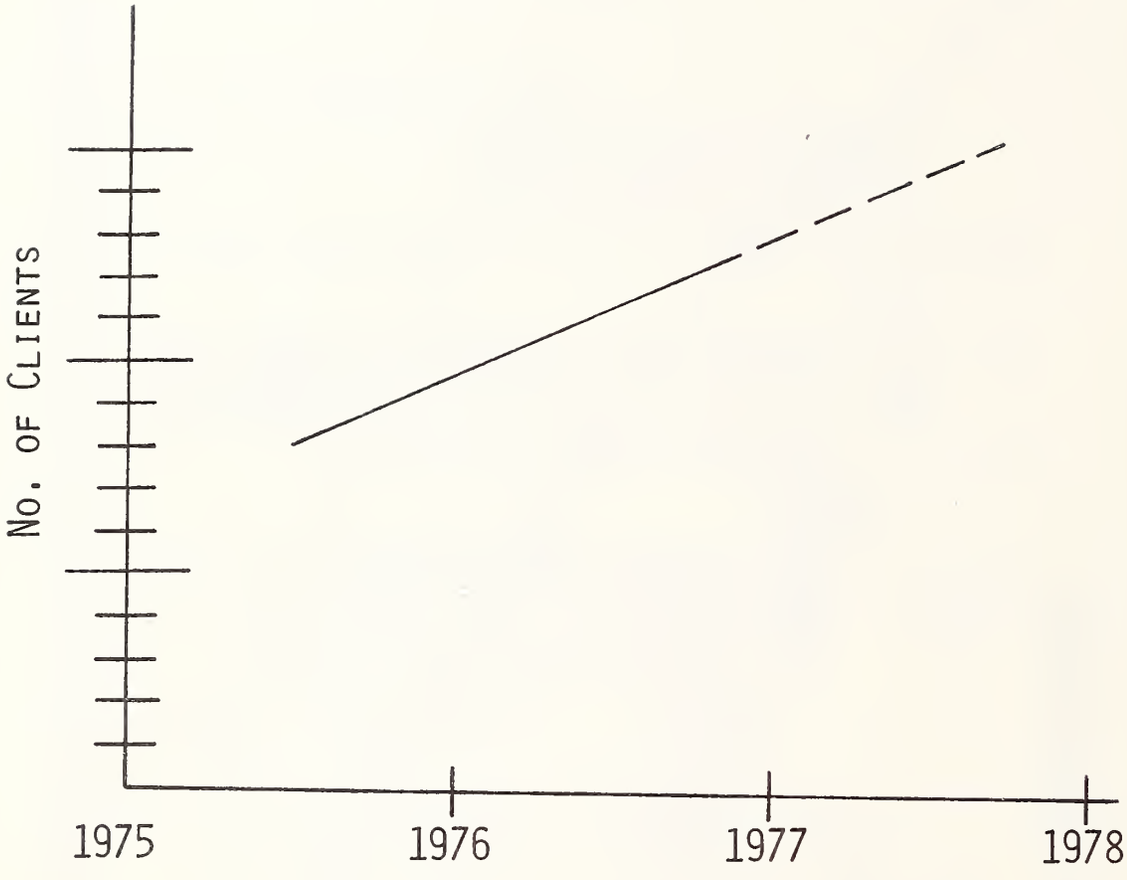
GROWTH IN MAS

50+%/YR



PARTIAL LIST:

BCS	GEIS	ITEL
CDC	INSCO	SMITH BARNEY
PRC	TYMSHARE	SUN INFOR. SERV.
CSC	TESDATA	

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MAS REPORTS PUBLISHED

1976

INDUSTRY

- Petroleum
- Accountants, Lawyers, Consultants
- Architects, Engineers
- Food Processing
- Health Insurance
- Economic and Financial Data Bases

IMPACT

- Computer/Communications Networks
- AMDAHL as a Viable Alternative To IBM
- EDP Plans and Budgets

1977

INDUSTRY

- Data Base Management Systems
- Savings and Loan
- Wholesale Distribution
- Discrete Parts Manufacturing
- Correspondent Banks
- Federal

IMPACT

- Small Business Computers
- New Hardware Economics
- Marketing Compensation

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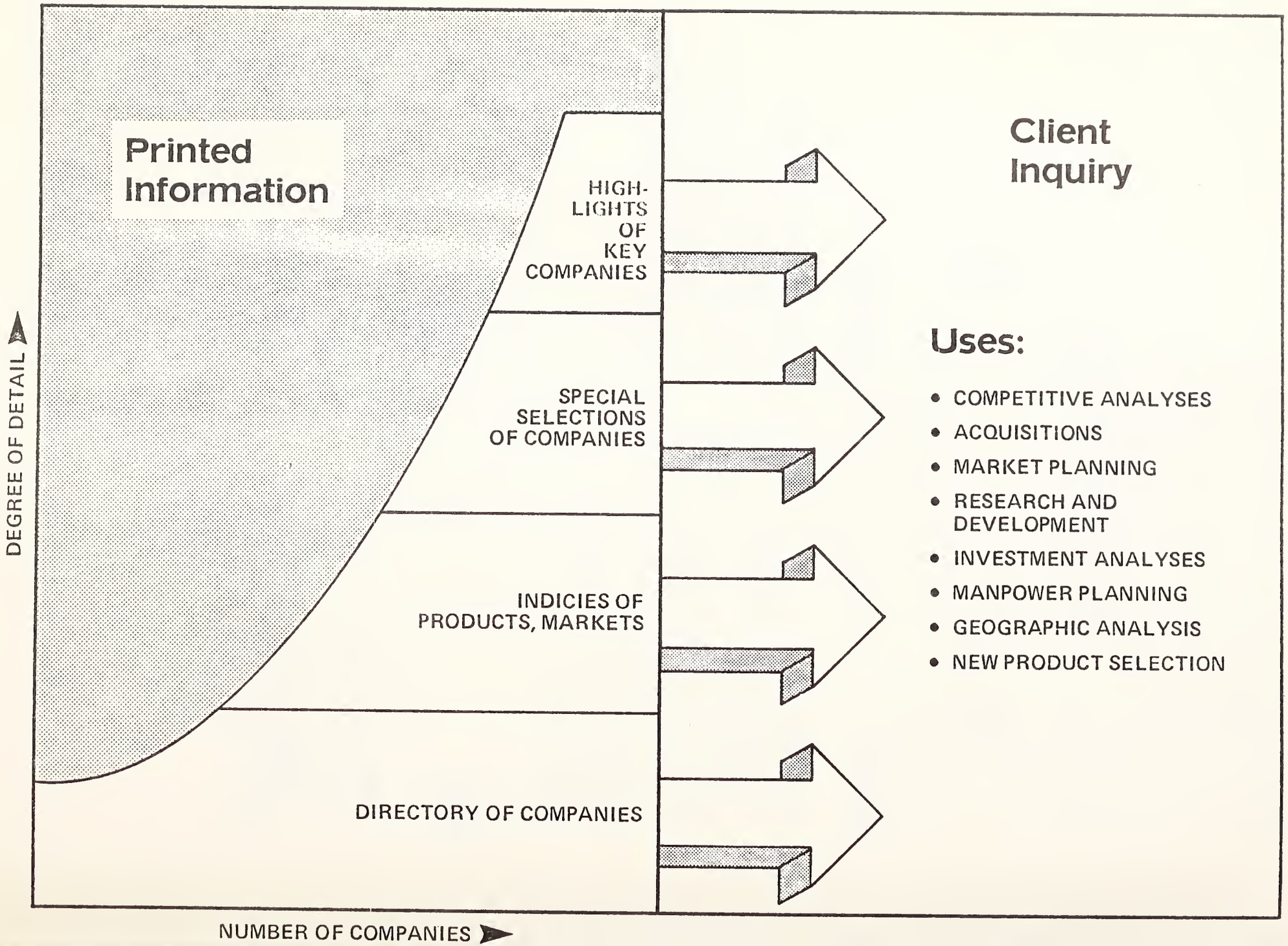
COMPANY ANALYSIS AND MONITORING PROGRAM (CAMP)



MULTICLIENT STUDIES

IBM SERIES 1

FEE: $4,500

PARTIAL CLIENT LIST:

- CDC
- SMITH BARNEY
- INTEL
- DEC

VALUE ADDED NETWORKS

FEE: STANDARD $7,500
SPECIAL 6,000

PARTIAL CLIENT LIST:

- UNITED TELECOM
- SUN INFORMATION SERVICES
- OFC. OF TELECOM POLICY
- WESTERN UNION
- SPERRY UNIVAC
- CSC
- ITT
- ITEL
- SATELLITE BUS. SYSTEMS
- AT&T

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CUSTOM PROJECTS

- SMALL AND QUICK (FOR MAS CLIENTS ONLY)

  EXAMPLES:

  - EVALUATIONS OF ACQUISITION OPPORTUNITIES
  - IMPACT OF TAXES ON COMPUTER SERVICES

  $5,000 AND RAPID RESULTS

- MEDIUM

  EXAMPLES:

  - MARKET ANALYSIS OF DBMS PROCESSOR
  - ANALYSIS OF RCS MARKET IN TELEPHONE INDUSTRY

  $5,000 TO $15,000 AND SIX TO TWELVE WEEKS COMPLETION

- LARGE

  EXAMPLES:

  - TRUST DEPARTMENT COMPUTER SERVICES OPPORTUNITIES
  - ANALYSIS OF IN-HOUSE TIMESHARING THREAT TO RCS

  OVER $15,000 AND TWELVE TO SIXTEEN WEEKS TO COMPLETION

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II. ENVIRONMENT FOR COMPUTER SERVICES

ENVIRONMENT FOR COMPUTER SERVICES

- IN POOR ECONOMY, COMPUTER SERVICES ARE RECESSION RESISTANT.
  - BUSINESS FROM EXISTING CLIENTS SLOWS DOWN WITH THEIR BUSINESS
  - NEW APPLICATIONS/CONTRACTS MAY BE DELAYED
  - HOWEVER, NEW APPLICATIONS MAY BE PROCESSED OUTSIDE TO AVOID NEW HARDWARE PURCHASES OR DEVELOPMENT COSTS
  - PERSONNEL 'FREEZES' MEAN MORE CONTRACT WORK
  - CONVERSIONS TO IN-HOUSE DELAYED

- STATIC ECONOMY ERODES COMPUTER SERVICES - WORST CASE.

- GOOD ECONOMY CREATES NEW OPPORTUNITIES. BUT IN-HOUSE DEPARTMENTS TAKE MORE WORK BACK INSIDE.

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USER ORGANIZATIONAL ISSUES

- DECENTRALIZATION/CENTRALIZATION
  - DISTRIBUTED PROCESSING = CENTRALIZED CONTROL
  - DECENTRALIZED PROCESSING = DECENTRALIZED CONTROL
  - DECENTRALIZATION OF PROFIT RESPONSIBILITY = DECENTRALIZED CONTROL
  - ALSO STRONG TREND TO NON-TECHNICAL COMPUTER USERS
  - CENTRALIZATION STILL TREND FED BY LARGE SYSTEMS
  - DISTRIBUTED PROCESSING ORGANIZATION ISSUE NOT SOLELY TECHNOLOGICAL
  - THIS CREATES OPPORTUNITIES FOR COMPUTER SERVICES

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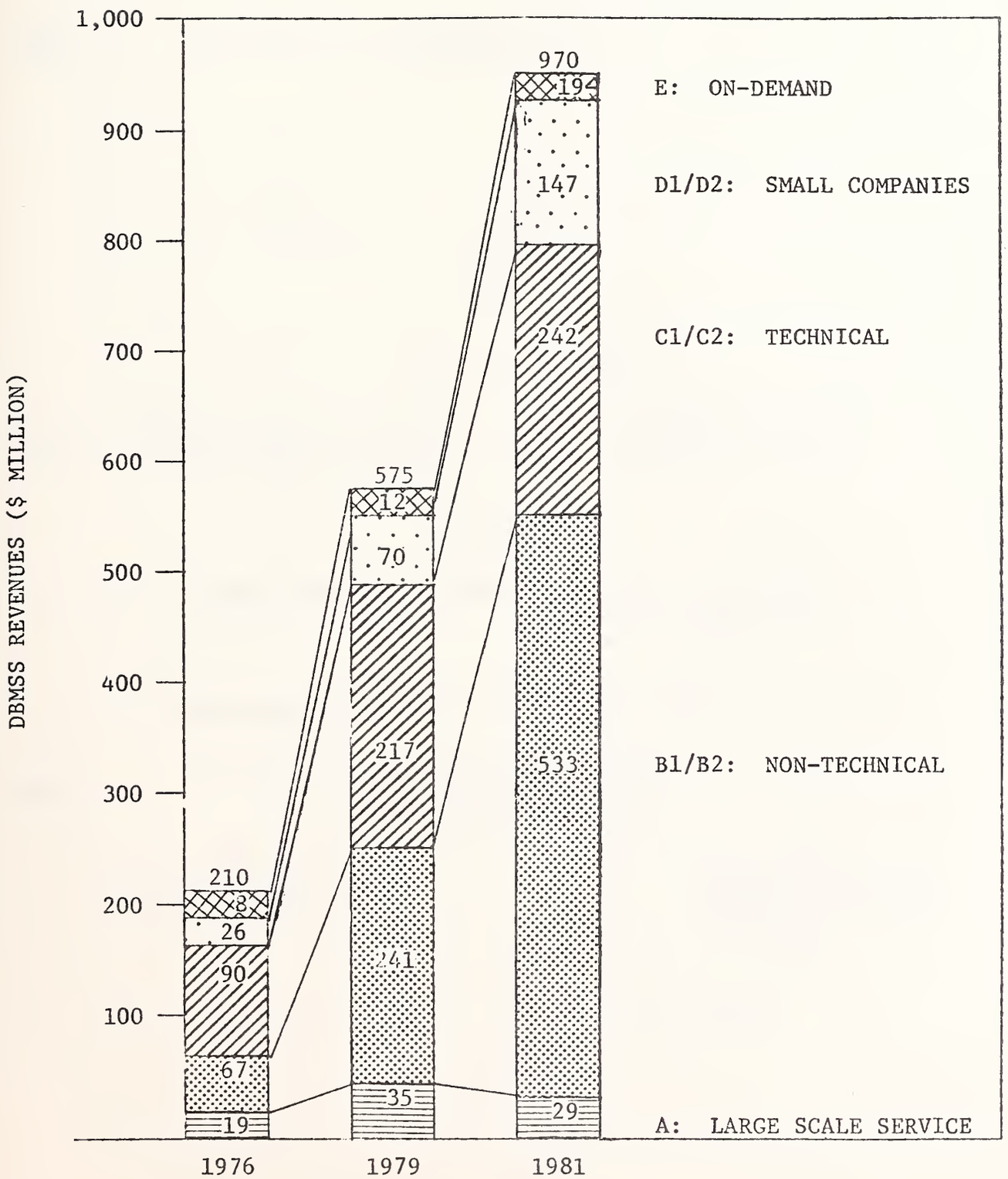
DBMSS MARKET SEGMENT REVENUE GROWTH: 1976-1981



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CHANGING BUYING POINTS/TECHNOLOGIES

V.P., FIN. — 1955

- DATA
- TEXT
- VOICE
- PRINTING

V.P., ADMIN. — 1970

- TEXT
- VOICE
- PRINTING

V.P., D.P./FINANCE

- DATA
- DATA TRANSMISSION

- THE FUNCTIONS WERE SEPARATED

V.P., INFOR. SVSC. — 1985

V.P., ADMIN.

V.P., D.P.

- DATA
- TEXT
- VOICE
- PRINTING
- GRAPHICS
- VIDEO

- THE FUNCTIONS ARE REJOINED/EXPANDED

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IMPACT ON SERVICES

OF CHANGING BUYING POINTS

- NON-DATA APPLICATIONS
  - Printing
  - Graphics
  - Conferencing
- THE OFFICE GROWS IN IMPORTANCE
  - Word processing
  - Electronic Mail
- INDUSTRY/SPECIALITY MARKETING GROWS IN VALUE
- NEW EQUIPMENT E.G. PABX, LASER PRINTERS ARE IMPORTANT
- THE GOOD NEWS
  - Potential revenue per client DOUBLES
  - Problem solving potential expands
  - IBM dominance reduces

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GOVERNMENT

- REGULATION
  - COMPUTER/COMMUNICATIONS (FCC)
  - SECURITY AND PRIVACY (HEW, STATES, ET AL)
  - EFTS
- TAXATION
  - FEDERAL
  - STATE
- LITIGATION
  - IBM
  - AT&T
- PURCHASING (MARKET IMPACT)

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STATE TAXATION

- SOFTWARE - In Flux
  - IS NON-TAXABLE
    - Alabama
    - Florida
    - Tennessee
  - IS TAXABLE
    - New York
    - California
  - PENDING
    - WISCONSIN

- PROCESSING - Many Issues
  - NEW JERSEY TAXES ACCORDING TO WHERE THE COMPUTER IS LOCATED
  - NEW YORK TAXES ACCORDING TO WHERE THE TERMINAL IS LOCATED
  - CALIFORNIA TAXES STORED PROGRAMS OFFERED FOR SALE WHETHER USED OR NOT.

- APAPSO AND DPMA ACTIVE

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III. ISSUES IN COMPUTER SERVICES

ISSUES

HARDWARE DEVELOPMENTS - IMPACT ON COMPUTER SERVICES

- PLUG COMPATIBLE MAINFRAMES PRICE/PERFORMANCE IMPACT:
  - SCIENTIFIC TIMESHARING
  - NATIONAL CSS
- CAPACITY/THROUGHPUT ADVANTAGE IS KEY
- NEW HARDWARE PROJECTIONS:
  - 3000 SERIES
  - OTHER IBM PROCESSORS

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HARDWARE DEVELOPMENTS

- USE OF MINI/MICRO COMPUTERS:
  - DISTRIBUTED PROCESSING
  - INTEGRATION WITH TEXT PROCESSSING
  - TURNKEY SYSTEMS
- SOFTWARE PROBLEMS WITH MINIS. AND HARDWARE/ SOFTWARE WITH MICROS
- NETWORK USE TO DELIVER AND MAINTAIN SOFTWARE
- IBM SERIES 1 VERY POSITIVE FOR COMPUTER SERVICES COMPANIES.

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COMPUTER SERVICES COMPETITION WITH HARDWARE

- LARGE MAINFRAMES
  - MAKE IN-HOUSE T/S POSSIBLE
  - SOFTWARE AVAILABILITY AND PERFORMANCE MOST IMPORTANT
  - NEW TOOLS WILL MAKE IN-HOUSE DEVELOPMENT MORE ATTRACTIVE

- MINIS/SMALL BUSINESS COMPUTERS
  - SMALL, STAND-ALONE, STANDARD BUSINESS
  - TURNKEY FOR SPECIALIZED OPERATIONS
  - ON-LINE CRT CAPABILITIES 'GLAMOUR'
  - VULNERABILITY INCREASES AS HARDWARE PRICES DROP
  - LACK SUPPORT AND SOFTWARE
  - FEATURES ARE BEING ADDED AT AN INCREASING RATE

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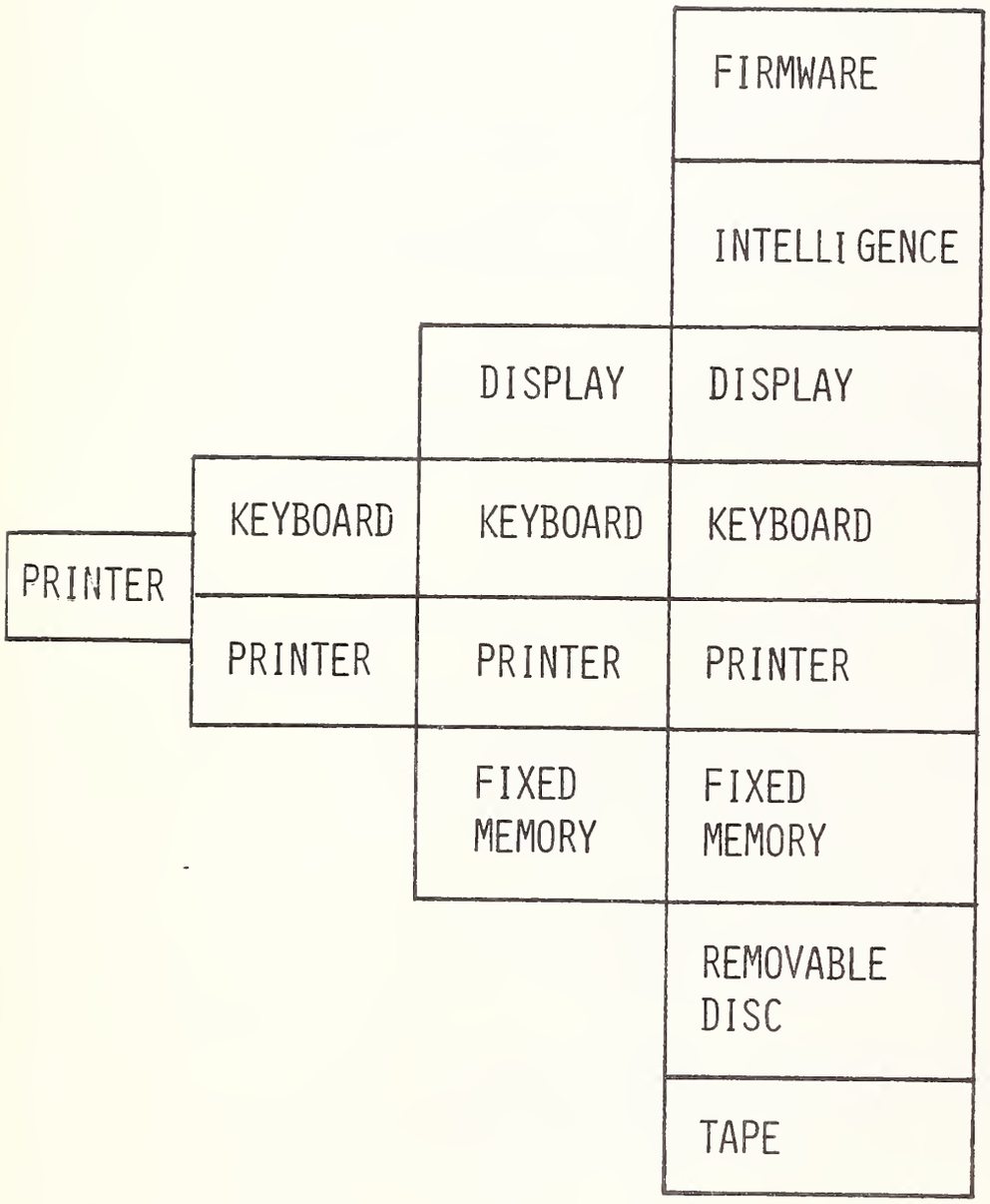
ON-SITE HARDWARE



COMING:

MULTIFONT PRINTING
VOICE INPUT/OUTPUT
PLASMA DISPLAYS
GRAPHICS INPUT/OUTPUT
VIDEO
"BABBLE MEMORIES"
FIBER OPTICS
INKJET
LASER

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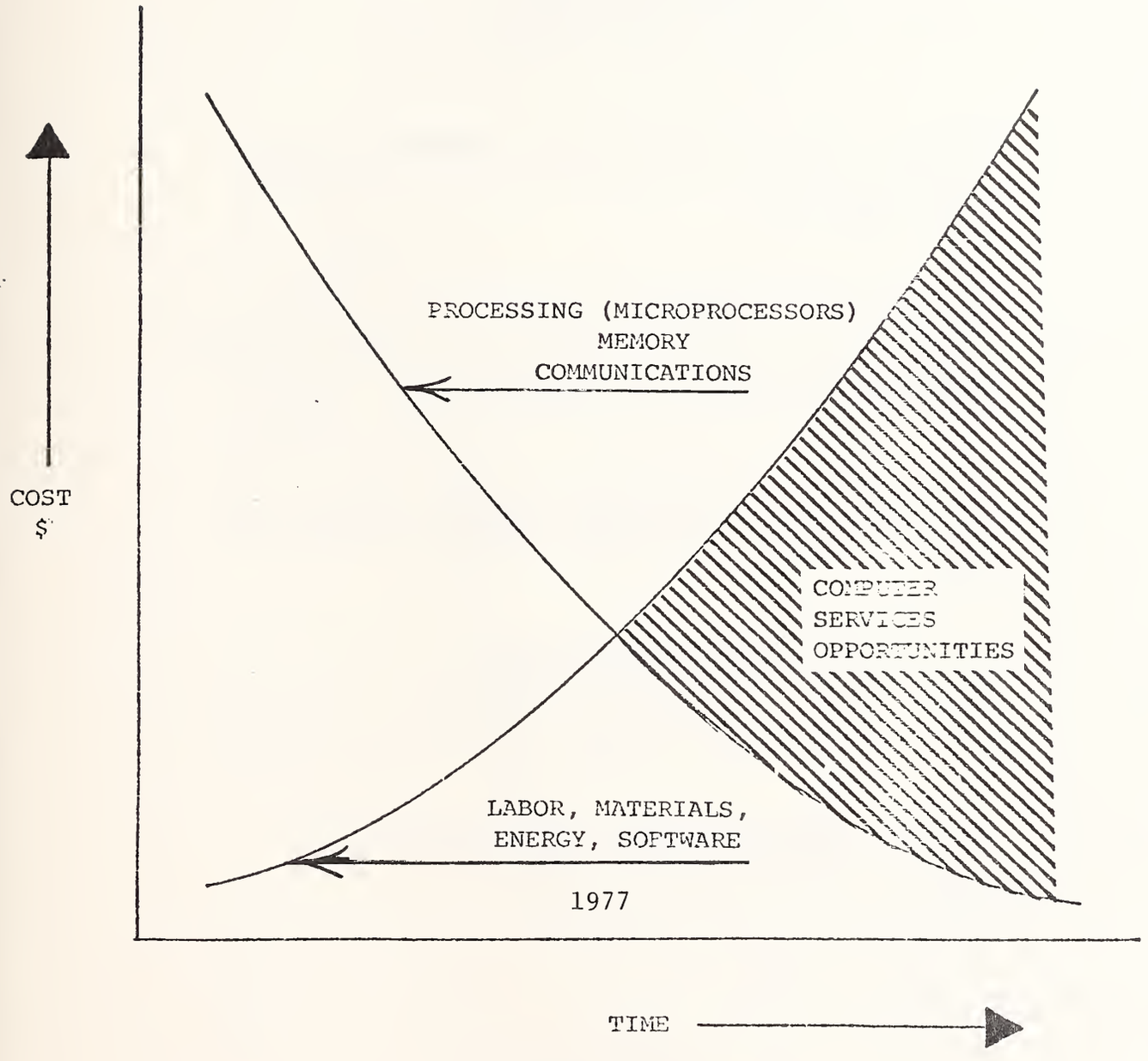
CHANGING COST RELATIONSHIPS



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COMMUNICATIONS

- LOCAL INTELLIGENCE REDUCES COMMUNICATIONS USE AND COST
- RELATIVELY, COMMUNICATIONS COSTS HAVE GONE UP APART FROM SATELLITE TRANSMISSION
- "DISTRIBUTED PROCESSING" OFTEN COMBINATION OF:
  - REMOTE DATA ENTRY
  - STAND ALONE, LOCAL APPLICATIONS
- 'ZERO' COMMUNICATIONS COSTS DRIVER TO CENTRALIZED DP

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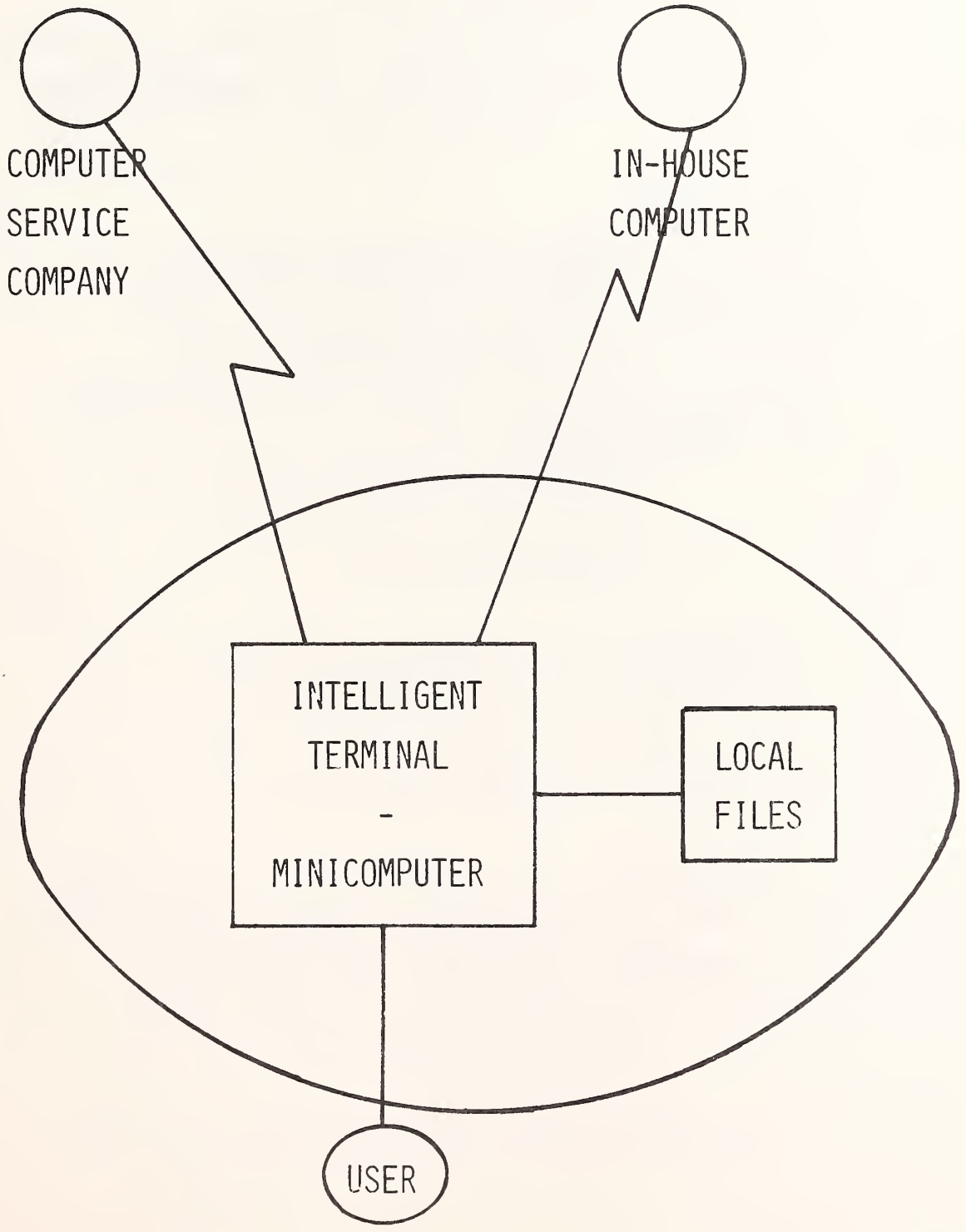
ACCOUNT CONTROL

WHO SUPPLIES THE TERMINAL?

WHICH BUDGET PAYS FOR IT?



INTRA SITE COMMUNICATIONS

- MOST APPLICATIONS IN CERTAIN INDUSTRIES NOW COMPUTER/COMMUNICATIONS APPLICATIONS.

- SERVICES AND HARDWARE VENDORS MUST ADDRESS INTRA SITE AND INTER SITE COMMUNICATIONS.

- HOSPITALS
  - NURSING/TREATMENT STATIONS
  - SPECIAL FACILITIES

- MANUFACTURING
  - SHOP FLOOR COMMUNICATION
  - INTER DEPARTMENT

- RETAIL - INTER DEPARTMENT

- HOTELS - MULTI-STATION

- PROCESSING SERVICES COMPANIES MUST SUPPLY HARDWARE TO OPERATE IN THESE AREAS.

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COMMUNICATIONS

VALUE ADDED NETWORKS (VAN)

- TELENET, TYMNET } PACKET SWITCHING GOOD FOR INTERACTIVE
- COMPAC (ITT), GRAPHNET } FACS SERVICES
- WESTERN UNION MAILGRAM, TELEGRAM, ETC.
  ($300M PLUS PER YEAR CURRENT REVENUES FROM TEXT TRANSMISSION SERVICES)
- SOUTHERN PACIFIC SPRINT - SWITCHED PRIVATE LINE SERVICE (MONTHLY CHARGES)

ISSUES:

- WHO WILL SOLVE THE COMPATIBILITY PROBLEMS IN INTRA COMPANY COMMUNICATIONS INCLUDING ELECTRONIC MAIL?
- WHAT WILL BE THE ROLE OF C.S. COMPANIES IN INTER-COMPANY TRANSMISSION? (SOME LARGE USERS ESTIMATE 20% OF DATA/TEXT WILL BE INTER COMPANY BY 1982)
- WILL THE USER REQUIRE/PAY FOR ENCRYPTING HARDWARE?

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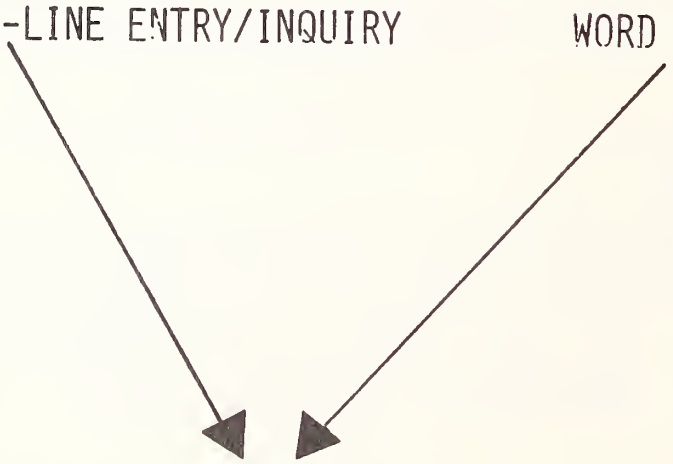
COMMUNICATIONS

CHANGING MIX OF INFORMATION

	DATA	TEXT/GRAPHICS
1960	KEYPUNCH	TYPEWRITER
1970	DATA ENTRY SYSTEM	TYPEWRITER
1980	ON-LINE ENTRY/INQUIRY	WORD PROCESSING SYSTEM



ELECTRONIC MAIL
TEXT/DATA BASES

- SERVICES OPPORTUNITY - AUTOMATE OFFICES - 75-90% LABOR
  AUTOMATE MAIL - 88% LABOR

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INCREASING AVAILABILITY OF SATELLITES

1976 WESTERN UNION

RCA

ATT/GTE

SBS (IBM, AETNA, COMSAT GEN.)

- WIDE BANDWIDTH - TRANSMIT DATA BASES
- LOWER COST - TRANSMIT IMAGES
- SERVICES OPPORTUNITY - SHARE GROUND STATIONS

SOFTWARE

HARDWARE/FIRMWARE/SOFTWARE STRATEGY

- IBM's 'LOCK-OUT'
- RELATED TO SECURITY ISSUE
- ALREADY STARTED WITH:
  - VM ASSIST FEATURE
  - MVS EXTENDED FUNCTION
- EVENTUALLY FUNCTIONAL/INDUSTRY PROCESSORS
  - SEISMIC PROCESSOR
  - BANKING PROCESSOR
- WILL IMPACT SYSTEMS/APPLICATION PACKAGES
  - WON'T KNOCK ALL OF THEM OUT
  - WILL BE ABLE TO INTERFACE WITH IT
- PROGRAM PORTABILITY WILL BECOME MORE COMPLEX

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DATA BASE MANAGEMENT SYSTEMS

- MUCH OF FUTURE DBMS WILL BE IN HARDWARE FOR PERFORMANCE IMPROVEMENT
- MOST USERS WILL HAVE MORE THAN ONE DBMS
- MASSIVE DATA BASE CAPABILITY TO EMERGE
- EASIER APPLICATION DEVELOPMENT AND ENGLISH LANGUAGE PRIME THRUSTS OF IBM
- MARKET FOR DBMS PACKAGES WILL EXPAND FROM PRESENT $70 MILLION TO $250 MILLION PER YEAR IN 1982.
- MARKET FOR APPLICATIONS BASED ON DBMS WILL GROW EVEN FASTER

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SOFTWARE

- INCREASED PROBLEM FOR IN-HOUSE EDP:
  - SIZE AND COMPLEXITY OF NEW SYSTEMS
  - 'INVENTORY' OF SYSTEMS
- REDUCES CAPACITY FOR NEW DEVELOPMENT
- OPPORTUNITIES CREATED BY TURNKEY SYSTEMS FOR NETWORK BASED MAINTENANCE.
- TURNKEY SYSTEMS MARKET:
  - ONE-AT-A-TIME DIFFICULT MARKET
  - MULTIPLE INSTALLATIONS KEY
- SOFTWARE FOR MINICOMPUTERS:
  - SERIES 1 IS THE TARGET
  - SUPPORT AND MAINTENANCE DIFFICULT TO PROVIDE PROFITABLY
  - 'DISPOSABLE' SOFTWARE

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MARKETING

- IN-HOUSE COMPETITION
- VENDORS MUST HAVE LOST BUSINESS PREVENTION PROGRAMS
- LOCK-IN WITH PROPRIETARY SOFTWARE AND SERVICE
- DECENTRALIZATION HELPS NEW BUSINESS ACQUISITION
- EMPHASIS ON SPEED AND EXPERIENCE IS KEY TO MEETING IT

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MARKETING

INTEGRATED INFORMATION SYSTEMS EMERGING: THE TERMINAL HANDLES:

- DIGITAL DATA
- DIGITAL TEXT/GRAPHICS (LASER PRINTERS)
- DIGITAL IMAGE (VIDEO, FACS)
- DIGITAL VOICE

IN THE MAINSTREAM OF IBM

- "THE INFORMATION AGE"
- TOP MANAGEMENT USER ISSUE
- 3850 PABX/SYSTEM 6

ATT IS IN THE FIGHT

- VS. SBS, CATV, VANS
- TOTAL COVERAGE - "THE PHONE OF THE FUTURE"

SERVICES IMPACT: MUST CONSIDER NON-DATA IN FUTURE SYSTEMS

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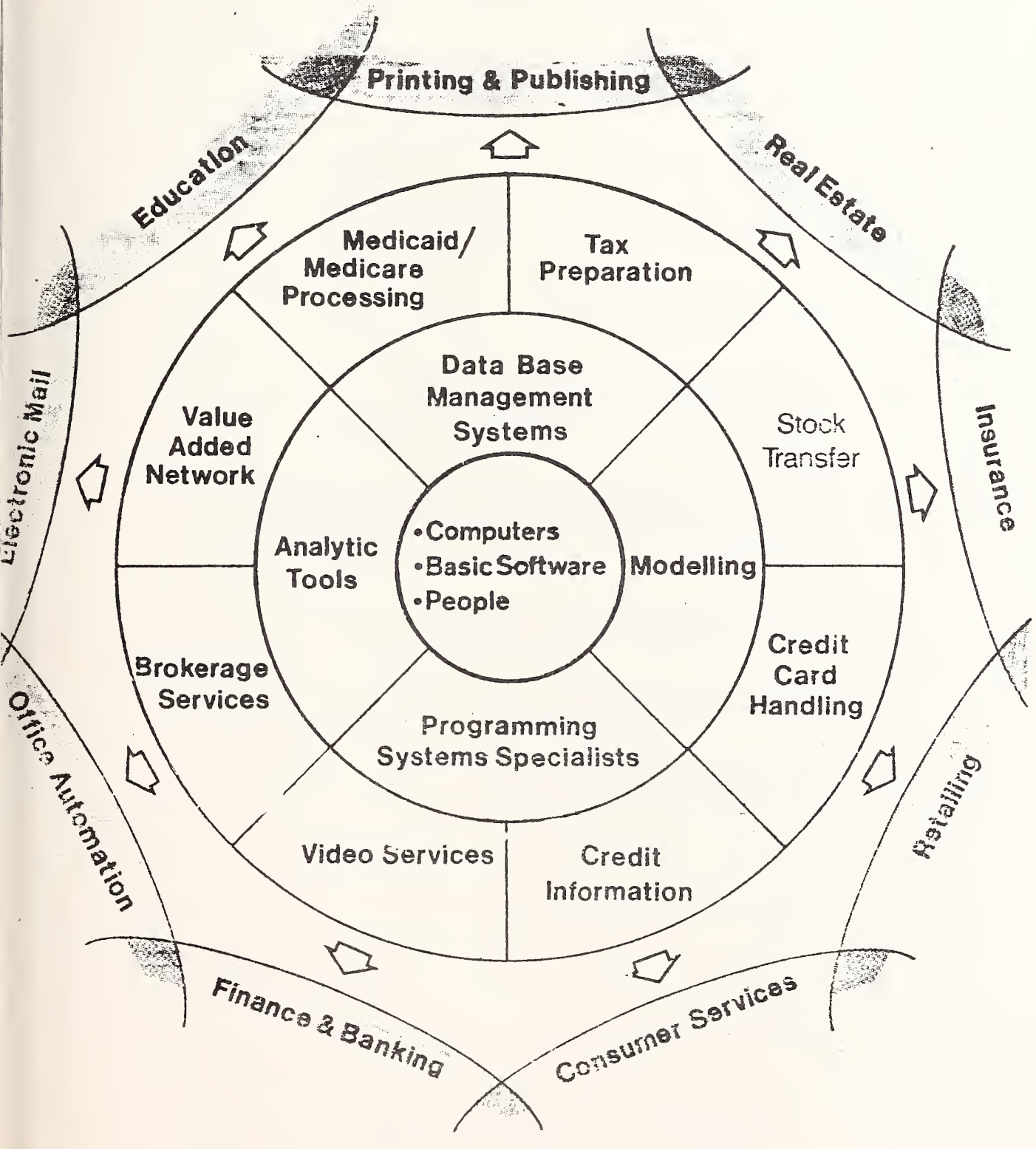
EXHIBIT III-1

COMPUTER SERVICES EXPANSION INTO
RELATED SERVICE INDUSTRIES



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ACQUISITION STRATEGIES

BASIC REASONS

- ADD COMPETENT STAFF
- WIDEN PRODUCT BREADTH
- REDUCE FAILURE RATE FOR ENTRY IN NEW INDUSTRIES
- EXTEND GEOGRAPHIC COVERAGE
- ACCELERATE GROWTH
- ADD AREAS OF EXPERTISE

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MARKETING

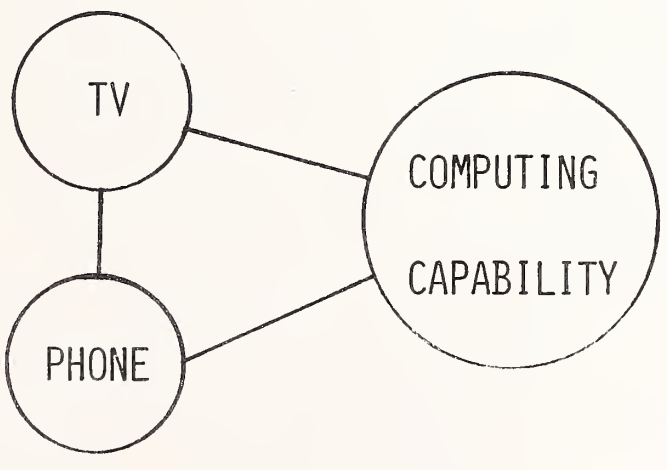
- CONSUMER MARKETS IN THE '80's
  - HOUSING
  - EDUCATION
  - MEDICAL
  - ENTERTAINMENT
  - ETC.

  $400 BILLION/YR

- BECOMING ELECTRONIC/DIGITAL

SERVICES:

ACCOUNTING
SHOPPING
SECURITY
EDUCATION
ENTERTAINMENT
PRINTING
FUNDS TRANSACTION



IN THE HOME

WHAT BECOMES THE TERMINAL?

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IV. COMPUTER SERVICES MARKET FORECAST

COMPUTER SERVICES MARKET

FORECASTS

- U.S. EXPENDITURES IN CURRENT DOLLARS
- 1976 MARKET $6 BILLION
- 1982 MARKET $14 BILLION
- AVERAGE ANNUAL GROWTH RATE 16%

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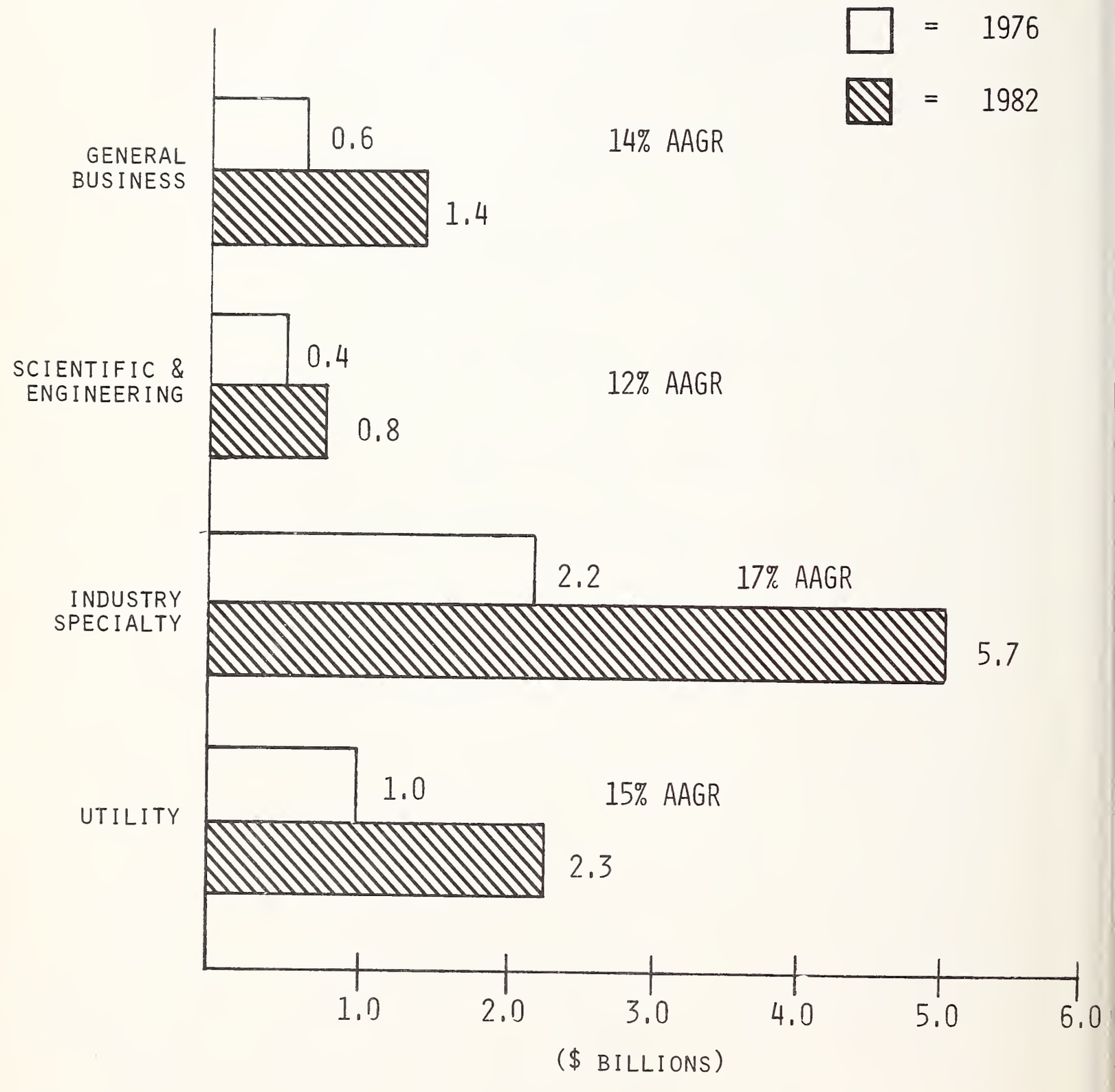
PROCESSING SERVICES MARKET

TYPE OF SERVICE



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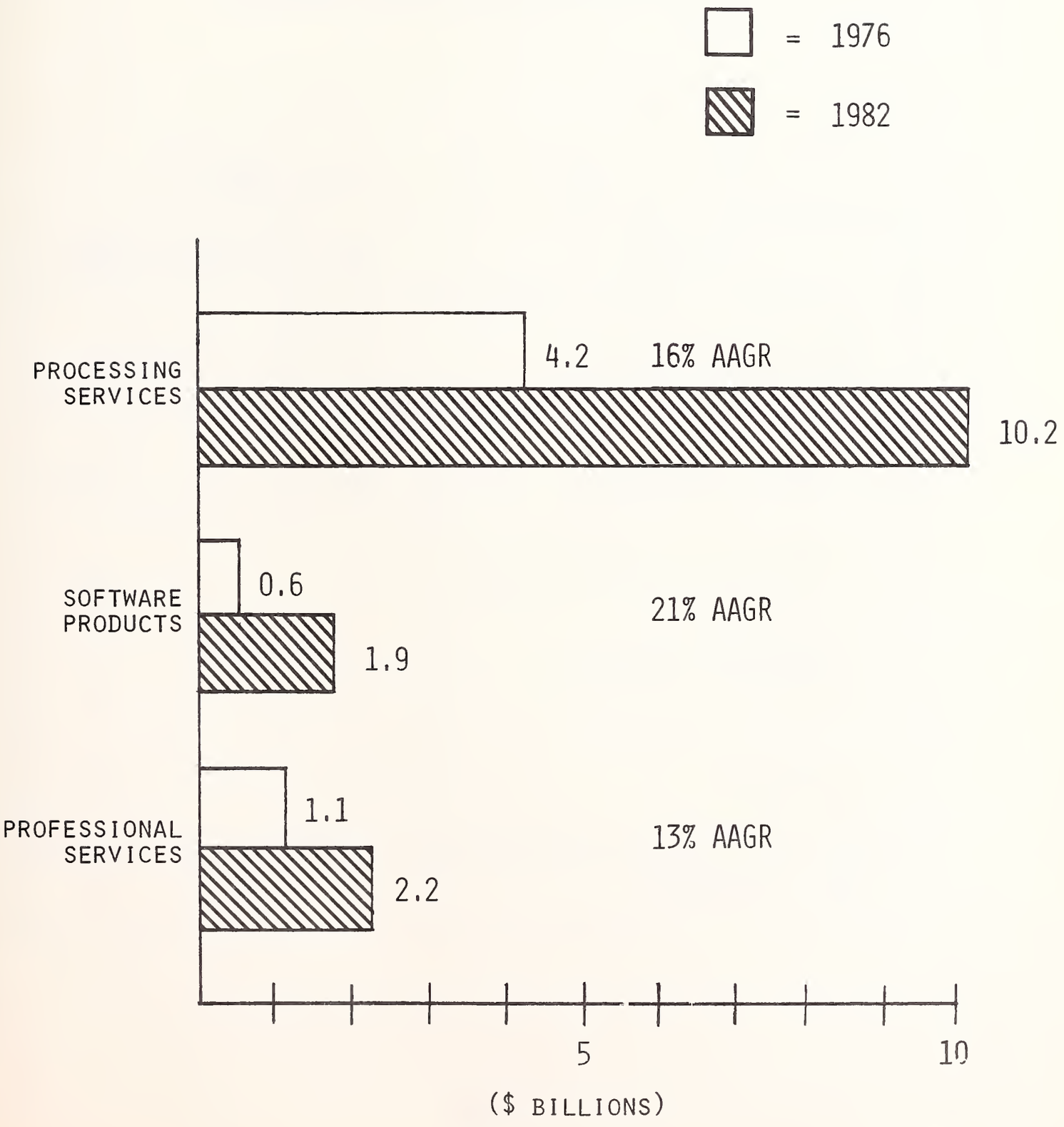
COMPUTER SERVICES SECTORS



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COMPUTER SERVICES MARKET FORECASTS

($ BILLION)

SERVICE	1976	1982	AAGR
PROCESSING SERVICES			
GENERAL BUSINESS	0.6	1.4	14%
SCIENTIFIC & ENGINEERING	0.4	0.8	12
INDUSTRY SPECIALTY	2.2	5.7	17
UTILITY	1.0	2.3	15
TOTAL PROCESSING	4.2	10.2	16

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COMPUTER SERVICES MARKET FORECASTS

($ BILLION)

SERVICE	1976	1982	AAGR
SOFTWARE PRODUCTS	0.5	1.9	21%
PROFESSIONAL SERVICES	1.1	2.2	13
TOTAL	1.6	4.1	16%

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COMPARISON 1976/1977

FORECASTS

	1976		1982	
PROCESSING SERVICES	1976 REPORT	1977 REPORT	1976* REPORT	1977 REPORT
GENERAL BUSINESS	0.8	0.6	1.9	1.4
SCIENTIFIC & ENGINEERING	0.4	0.4	0.7	0.8
INDUSTRY SPECIALTY	1.4	2.2	4.1	5.7
UTILITY	1.1	1.0	2.4	2.3
TOTAL	$3.7	$4.2	$9.1	$10.2

($ BILLION)

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CHANGES

	1976 $ MILLION
BANKING AND FINANCE	
CORRESPONDENT BANKING	+ 130
SAVINGS & LOAN	+ 20
SECURITIES DB	+ 26
OTHER FINANCE	+ 49
INSURANCE	
MEDICAID/MEDICARE	+ 20
MEDICAL	
HOSPITALS AND CLINICS	+ 85
PROFESSIONAL AND OTHER	+ 10
RETAIL	
CREDIT	+ 120
OTHER INDUSTRIES	
CONSTRUCTION	+ 40
TOTAL	+$500 MILLION

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GENERAL BUSINESS PROCESSING

MODE	1976
RCS	$190M
FM	20
BATCH	420
TOTAL	$630M (AAGR 14%)

- MANUFACTURING AND DISTRIBUTION 68% OF MARKET

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GENERAL BUSINESS PROCESSING

- HUMAN RESOURCES SERVICES
  - PRIME OPPORTUNITY
  - BENEFITS PACKAGES
  - REGULATION (EEO, DOL & SEC)
  - INSURANCE

- ACCOUNTING
  - CONVERTING ON-LINE
  - SMALL/MEDIUM COMPANIES
  - CHEAP TERMINALS
  - SMALL BUSINESS COMPUTER COMPETITION

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GENERAL BUSINESS PROCESSING

- FINANCIAL
  - MAJOR RCS USE
  - TAX PLANNING
  - CASH MANAGEMENT
- TEXT
  - BOWNE T/S
  - WYLBUR
- ADMINISTRATIVE
  - TELEPHONE DIRECTORIES
  - INVENTORIES (PEOPLE TOO)

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SCIENTIFIC AND ENGINEERING PROCESSING

MODE	1976
RCS	$225M
FM	105
BATCH	80
TOTAL	$410M (AAGR 12%)

- STRUCTURES MAJOR GROWTH AREA
  - GRAPHICS
  - NEW SOFTWARE
  - 'PUSH-DOWN'

- UTILITIES, MANUFACTURERS, A & E, AND GOVERNMENT ACCOUNT FOR 90%

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SCIENTIFIC AND ENGINEERING PROCESSING

- BIOCHEMICAL AND RELATED SCIENCES ARE OPPORTUNITY
- SIMULATION ACTIVITY WILL INCREASE
- NEED TO DIFFERENTIATE PRODUCT
  - PROPRIETARY SOFTWARE
  - INTERFACES
- FM OF ENGINEERING CENTERS;
  - ESPECIALLY RFM
  - LEVERAGE INTO BUSINESS

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INDUSTRY SPECIALTY PROCESSING

MODE	1976
RCS	$ 940M
FM	540
BATCH	760
TOTAL	$2,240M (AAGR 17%)

- BANKING AND FINANCE 36%

- WIDE RANGE OF SPECIALTIES, FEW SATURATED

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INDUSTRY SPECIALTY PROCESSING

- MEDICAL, BANKING AND FINANCE VERY COMPETITIVE

- SOME KEY SPECIALTIES

- BANKING (CORRESPONDENT + FM)	$380M
- SAVINGS AND LOAN	110
- MEDICAID/MEDICARE	160
- TAX PREPARATION	50
- ECON, AND FINANCIAL D.B	200
- CREDIT	150
- HOSPITALS AND CLINICS	210
- NUMERICAL CONTROL	40

- SOFTWARE AND PEOPLE KEY TO FM

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INDUSTRY SPECIALTY PROCESSING

- DATA BASES $500 MILLION 1982:
  - FINANCIAL & ECONOMETRIC
  - NEWS
  - SCIENTIFIC AND ENGINEERING
  - REGULATION
  - DEMOGRAPHIC DATA
- ADD MARKETING AND PEOPLE
- CREDIT IN ANOTHER AREA
- TOTAL DATA BASES MUTLI BILLION DOLLAR MARKET

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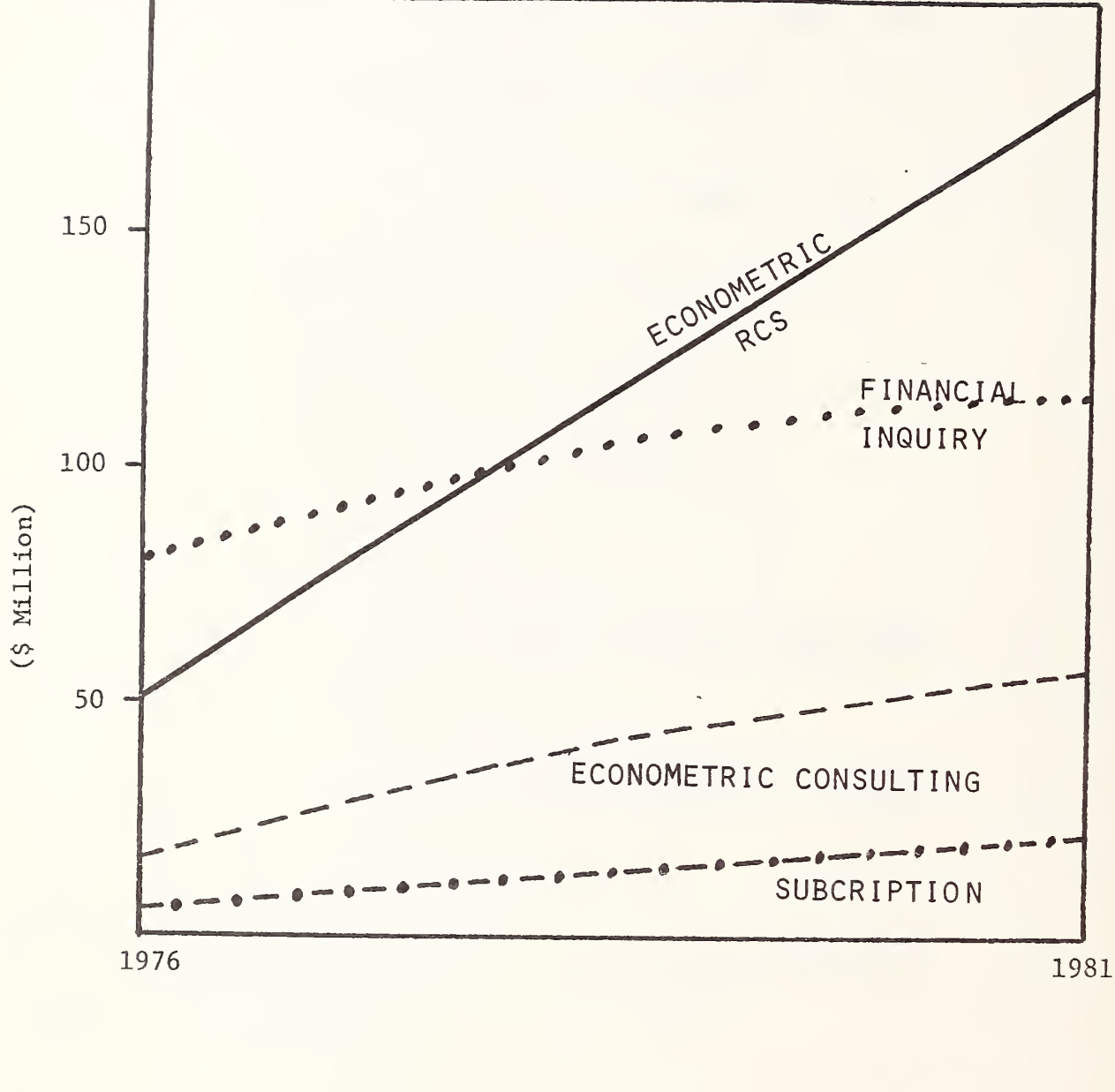
FORECAST OF MARKET FOR
FINANCIAL AND ECONOMIC DATA BASE RELATED
REMOTE COMPUTING SERVICES



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UTILITY PROCESSING

- MODE — 1976

RCS	$500M
FM	150
BATCH	310
TOTAL	$960M (AAGR 15%)

- PROBLEM SOLVING

- MAJOR TOOLS ARE DBMS
  - GENERALIZED
  - SPECIALIZED

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UTILITY PROCESSING

- DBMSS WILL ACCOUNT FOR 75% OF UTILITY MARKET IN 1982
- ALSO USED FOR APPLICATIONS PACKAGE DEVELOPMENT
- OTHER UTILITY SERVICES
  - COM
  - GRAPHICS
  - PRINTERS

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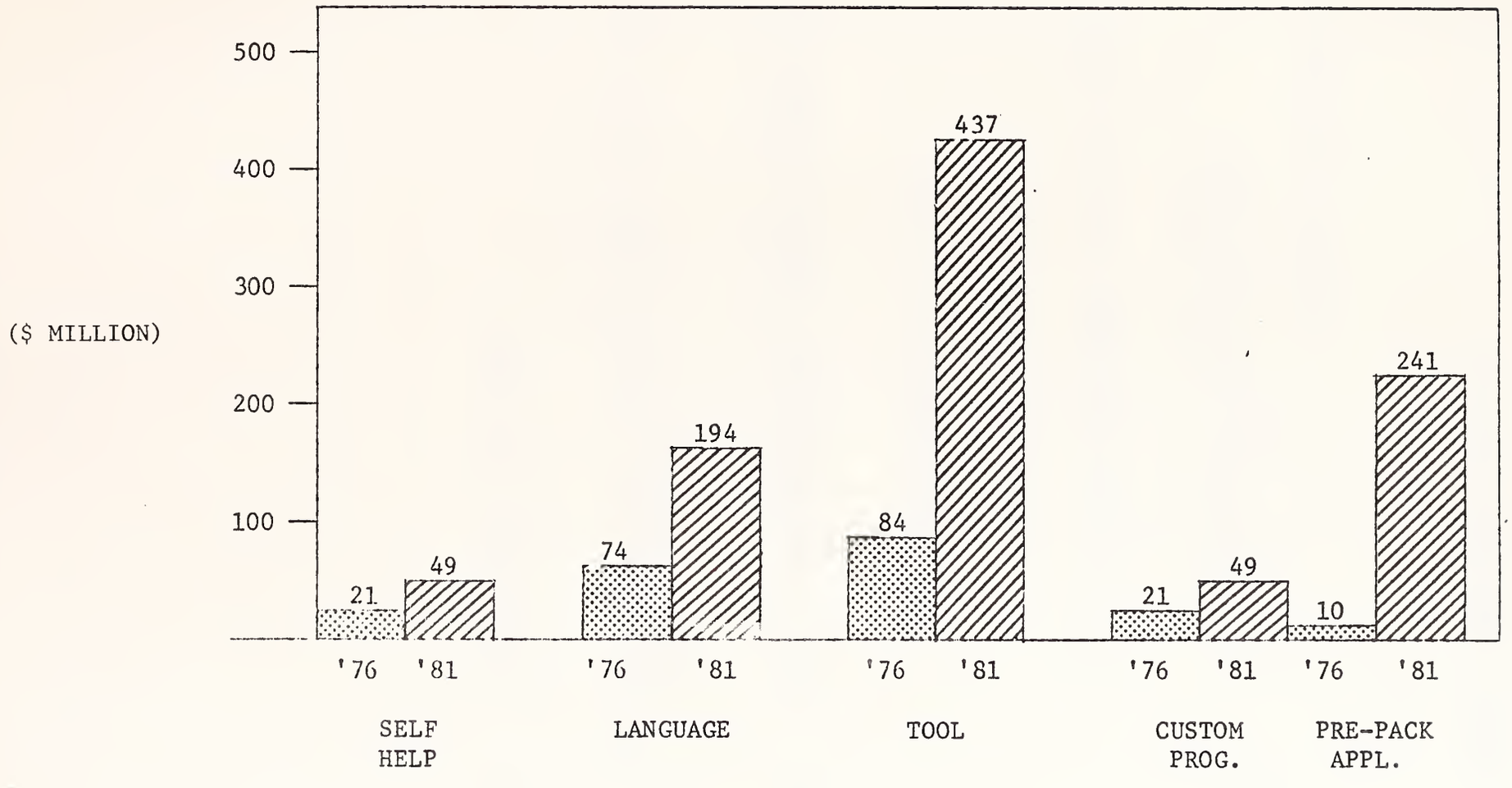
DBMSS MARKET GROWTH BY PRODUCT STRATEGY: 1976-1981



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REMOTE COMPUTING SERVICES

- DISTRIBUTED FUNCTION USING PTUs (PROGRAMMABLE TERMINAL UNITS)
  - SPEED REDUCTION
  - COST REDUCTION
  - FLEXIBILITY
- 80% OF PROCESSING WILL INVOLVE COMMUNICATIONS
- "VOICE RESPONSE" MAJOR CHANGE NOW-("TIP", "RAPIDVOICE")
- 'VOICE INPUT' IN 1980s

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REMOTE COMPUTING SERVICES

- CHEAP TERMINALS DRIVING DOWN THRESHOLD:
  - PAYROLLS AT $50/MONTH
  - MULTI-LOCATION POSSIBILITIES
- "STORAGE" COSTS MUST GO DOWN
- PRICING IS KEY ISSUE-GET AWAY FROM COMPLEX HARDWARE PRICING

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ON-SITE HARDWARE

- TURNKEY SYSTEMS
  - VENDOR LEAVES, EXCEPT FOR SOFTWARE MAINTENANCE
  - "VALUE ADDED" SOFTWARE REVENUES IN SOFTWARE PRODUCTS

- SERVICE
  - CONTINUING SUPPORT
  - TIED-IN TO NETWORK
  - SERVICES REVENUES

- MUST HAVE FOR TIE TO OFFICE

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FACILITIES MANAGEMENT:

- "LONG TERM" COMMITMENT FOR PROCESSING
  VENDOR MANAGEMENT (SOMEONE ON-SITE)

- "REMOTE FM" 50% BY 1982

  - HOSPITALS (MCAUTO, SMS)
  - BANKS (NATIONAL SHAREDATA)
  - INSURANCE (EDS)

- SOLUTION FOR MIDDLE SIZED COMPANIES

- SMALL BUSINESS GENERAL FM WILL GROW RAPIDLY:

  - SMALL COMPUTER PROBLEMS
  - LOCAL VENDORS

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SOFTWARE PRODCUTS

- SYSTEMS PACKAGES:
  - $750 MILLION BY 1982
  - TOOLS FOR PRODUCTIVITY
  - INTERFACES
  - EXPOSED TO MAINFRAME VENDORS
  - DBMS GROWTH 40-50% PER YEAR

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SOFTWARE PRODUCTS

- APPLICATIONS PACKAGES
  - $950 MILLION BY 1982
  - SMALL COMPUTERS CREATE MARKET (TURNKEY AND PACKAGE)
  - SECONDARY APPLICATIONS MOST SUCCESSFUL
  - CAN USE MAINFRAME DEVELOPMENTS
  - FUNCTIONAL PROCESSORS ON THE WAY
  - SALE CAN REDUCE SERVICE POTENTIAL

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SOFTWARE PRODUCTS

- PACKAGES GENERALLY UNDERPRICED
- COMPANIES BECOMING ACCEPTED
  - SIZE
  - STABILITY
  - PERFORMANCE
- MANY "ONE PRODUCT" COMPANIES
- MONEY NOW GOING INTO R&D

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SOFTWARE PRODUCTS

- NETWORK TO MAINTAIN AND DELIVER SOFTWARE
  (RCS OPPORTUNITY)

- TAKE ADVANTAGE OF HFS
  HARDWARE ◄——► FIRMWARE ◄——► SOFTWARE

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PROFESSIONAL SERVICES

- GROWING AT 13% PER YEAR
- "STEPPING STONE" TO PROCESSING
- SELL IN CONJUNCTION WITH PROCESSING
- PEOPLE BUSINESS CAN BE PROFITABLE, STABLE, AND MANAGEABLE
- APPLICATION REQUIREMENTS FORCE THE MARKET

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PROFESSIONAL SERVICES

- TIED TO INDUSTRY SPECIALTY, NEED INDUSTRY EXPERT CAPABILITY
- GOVERNMENT-SINGLE LARGEST USER
- ACCOUNTING COMPANIES HAVE 20% OF MARKET
- "HOT SPOTS"
  - COMPUTER PERFORMANCE EVALUATION
  - COMPUTER/COMMUNICATIONS
  - MINICOMPUTER SYSTEMS
  - DBMS

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V. INDUSTRY USE OF COMPUTER SERVICES

INDUSTRY SECTOR MARKETS

INDUSTRY	1982 MARKET	% OF TOTAL
BANKING/FINANCE	$2800M	20%
DISCRETE MANUFACTURING	1900	13%
FEDERAL GOVERNMENT	1900	13%
PROCESS MANUFACTURING	1000	7%
RETAIL	1000	7%
INSURANCE	1000	7%

($ MILLION)

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TYPES OF INDUSTRY OPPORTUNITIES

- 'BROKERAGE'
  - TRAVEL AGENTS
  - REAL ESTATE
  - SECURITIES
- MULTI-SITE, DYNAMIC OPERATIONS
  - FAST-FOOD
  - HOTELS/MOTELS
  - ELECTRONIC MANUFACTURERS
- EDP TRANSACTION DEPENDENT
  - BANKS
  - GOVERNMENT
  - HOSPITALS
  - MEDICAID/MEDICARE

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BANKING AND FINANCE

- CORRESPONDENT BANKING/FM IN 1976
  - 7600 BANKS PAY AVERAGE $50,000/YEAR = $380M
  - 400 CORRESPONDENT BANKS HAVE $280M
  - SERVICES COMPANIES HAVE $100M

- CORRESPONDENT BANKING/FM IN 1982
  - 9000 BANKS AT $100,000/YEAR = $900 MILLION
  - CORRESPONDENT BANKS HAVE $600 MILLION
  - SERVICES COMPANIES HAVE $300 MILLION

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TOTAL ASSETS OF FINANCIAL INTERMEDIARIES

FINANCIAL INTERMEDIARY	1960 ($B)	1965 ($B)	1960-1965 % GROWTH	1970 ($B)	1965-1970 % GROWTH	1975 ($B)	1970-1975 % GROWTH
COMMERCIAL BANKS	$257.6	$377.3	46.5%	$ 576.2	52.7%	$ 958.4	66.3
SAVINGS & LOAN ASSOCIATIONS	71.5	129.6	81.3	176.2	36.0	338.4	92.1
LIFE INSURANCE COMPANIES	119.6	158.9	32.9	207.3	30.5	289.1	39.5
MUTUAL SAVINGS BANKS	40.6	58.2	43.3	79.0	35.7	121.0	53.2
FINANCE COMPANIES	26.9	44.8	66.5	62.5	39.5	92.5	48.0
INVESTMENT COMPANIES	17.0	35.2	107.0	47.6	35.2	42.2	11.3
CREDIT UNIONS	5.7	10.6	86.0	17.8	67.9	38.3	115.2
PRIVATE PENSION FUNDS	38.2	73.6	92.7	110.8	50.5	156.5	41.2
STATE AND LOCAL PENSION FUNDS	19.6	33.2	69.4	58.1	75.0	106.4	83.1
TOTAL	$596.7	$921.4	54.4%	1,335.5	44.9%	$2,142.8	60.4%

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BANKING AND FINANCE

- DATA BASE USE
  - $106M IN 1976
  - 222M IN 1982
- SAVINGS AND LOANS
  - $114M IN 1976
  - 250M IN 1982
- TRUST SERVICES $100M IN 1982
- EXPANSION FROM QUOTATION SERVICES BY GTE, BR, QUOTRON

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DISCRETE MANUFACTURING

- COMPUTER ASSISTED DESIGN IS MAJOR OPPORTUNITY
- N/C MACHINE TOOL
- MOVEMENT TO AUTOMATED FACTORY
- ON-LINE, CRT BASED ORDER ENTRY
- SOFTWARE EMERGING
- MANAGEMENT POORLY UNDERSTANDS EDP

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EXPENDITURES AND REVENUES FOR DATA PROCESSING IN
FEDERALLY FUNDED HEALTH INSURANCE
($ MILLION)

ITEM	1976	NHI SCENARIO I 1980 (1)	NHI SCENARIO II 1980 (2)
1a. MEDICARE CONTRACTORS			
PART A	$ 28	$ 50	$ 15
PART B	78	130	35
SUB-TOTAL	106	180	50
1b. MEDICARE SUB-CONTRACTORS	34	75	10
TOTAL MEDICARE	140	255	60
2. CHAMPUS	8	12	12
3a. STATE AND LOCAL GOVERNMENT IN-HOUSE EXPENDITURES - MEDICAID	100	125	15
MEDICAID CONTRACTORS AND SUB-CONTRACTORS	144	175	25
TOTAL MEDICAID	244	300	40
4. NATIONAL HEALTH INSURANCE	0	50	$ 1,000
5. OTHER	20	50	100
TOTAL EDP	$412 M	$667 M	$1,212 M

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MEDICAL INDUSTRY

- HOSPITALS AND CLINICS $210 MILLION FOR PROCESSING SERVICES IN 1976
- NEED COMPUTER/COMMUNICATIONS SYSTEMS
- 50% OF HOSPITALS USE SERVICES
- PROFESSIONAL GROUPS, HMO's ARE EMERGING MARKETS
- OPPORTUNITY FOR RCS IN BIOLOGICAL SCIENCES (NHI LIKE NASA)?

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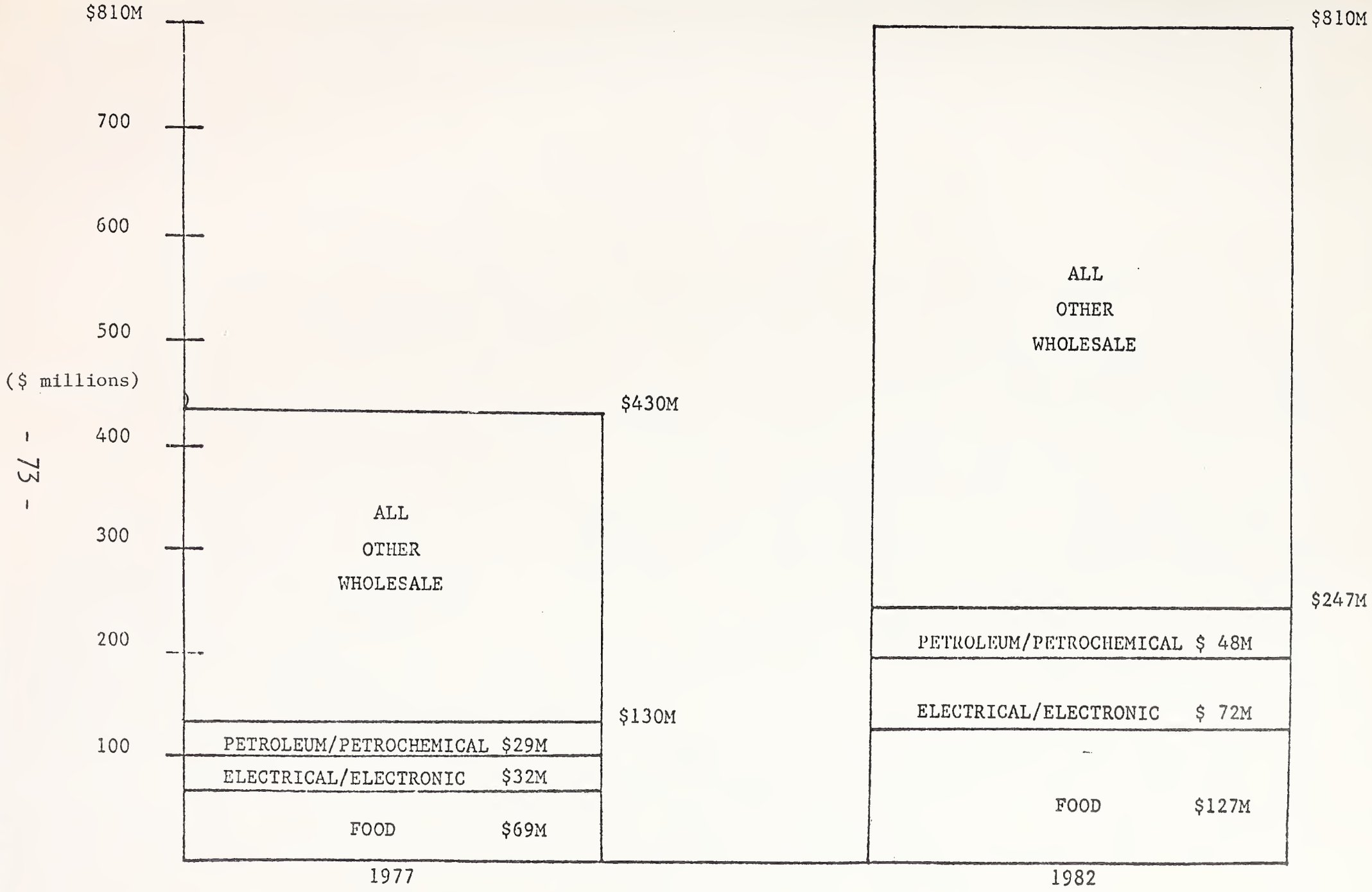
WHOLESALE INDUSTRY, EXPENDITURES FOR COMPUTER SERVICES 1977/1982



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VI. COMPETITION

SOME LEADING VENDORS

COMPANY	COMPUTER SERVICES REVENUES		AVERAGE ANNUAL GROWTH RATE LAST 4-5 YEARS
	1980	1982	
ADP	$500M	800	26%
BRADFORD	120	170	17%
CDC	650	900	19%
CSC	400	550	18%
EDS	300	460	10%
GEIS	250	360	20% (2 YRS)
ITEL	170	250	43%
MCAUTO	340	460	16% (3 YRS)
NCSS	80	130	26%
TYMSHARE	250	430	32%
XEROX	90	140	30%

($ MILLIONS)

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PROFITABILITY PERFORMANCE

SALES $20 MILLION OR LESS

	REVENUE FISCAL 1976	RETURN ON REVENUES B/T		
		1974	1975	1976
MATHEMATICA	$18.9M	9.3%	6.8%	6.8%
RAPIDATA	15.6	7.8	16.2	5.1
KEYDATA	14.9	(5.1)	2.2	8.0
COMSHARE	13.8	14.7	12.2	9.4
ON-LINE SYSTEM	12.0	29.3	21.1	11.7
ANACOMP	12.9	8.3	4.7	12.4
COMPUSERVE	11.4	11.1	4.7	14.0
RANGE '74 - '76	-	(5.1)-29.3	2.2-21.1	5.1-14.0

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PROFITABILITY PERFORMANCE

SALES $20 MILLION TO $100 MILLION

	REVENUE FISCAL 1976	RETURN ON REVENUES B/T 1974	1975	1976
BRADFORD NATIONAL	$65.8M	7.8	14.8	8.4
TYMSHARE, INC.	81.8	13.1	16.3	16.1
NATIONAL CSS, INC.	35.6	11.8	10.7	12.4
NATIONAL DATA CORP.	32.9	14.4	11.2	15.9
RANGE '74 - '76	-	7.8-14.4	10.7-16.3	8.4-16.1

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PROFITABILITY PERFORMANCE

SALES OVER $100 MILLION

		Revenues Fiscal 1976	Return on Revenues B/T 1974	1975	1976
COMPUTER SCIENCES	'76	$219.9M	1.6	4.1	6.6
	'77	234.7			
AUTOMATIC DATA PROC.		199.0	18.6	17.6	18.6
ELECTRONIC DATA SYSTEMS		133.0	24.6	21.9	20.0
RANGE '74 - '76		-	1.6-24.6	4.1 21.9	6.6-20.0

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ADP

	FY 75	FY 76	FY 77
REVENUES	163	199	245
PROFITS (IBT)	28	37	46

($ MILLIONS)

SPECIALIZATION
- DEALER SERVICES

BANKING
- FINANCE/BROKERAGE
- MEDICAL
- DISTRIBUTION

SERVICES
- GENERAL BUSINESS BATCH
- RCS (NETWORK SERVICES)
- USE OF MINIS. SOME PROBLEMS
- 20% GROWTH & ACQUISITIONS

NOTES
- INTERNATIONAL
- CONSOLIDATING DEC 10 COMPANIES
- 45,000 CLIENTS
- REORGANIZED

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BRADFORD

	FY 74	FY 75	FY 76
REVENUES	50	57	66
PROFITS (IBT)	5	9	5

($ MILLIONS)

SPECIALIZATION:
- SECURITIES, MUTUAL FUNDS
- BANKING (TRUST & OPERATIONS)
- GOVERNMENT
- MEDICAID - N.Y.

SERVICES
- FM
- BATCH
- DATA NETWORK LACKING

NOTES
- GEOGRAPHICALLY CONCENTRATED
- DOMINANT
- JOINT VENTURES/ACQUISITIONS
- MEDICAID-N.Y. STATE
- SHAREHOLDER SERVICES
  (2,000 CORPORATIONS, 6,000,000 SH.)

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CSC

	FY 74	FY 75	FY 76	FY 77
REVENUES	147	177	220	275
PROFITS (IBT)	2	7	14	21

($ MILLIONS)

INDUSTRY
- FEDERAL GOVERNMENT
- STATE & LOCAL GOVERNMENT
- MANUFACTURING
- BANKING

SERVICES
- RCS (INFONET)
- FM - GOVERNMENT
  - COMMERCIAL
- PROFESSIONAL SERVICES

NOTES
- SYSTEM CONTRACTS
- ACQUISITIONS
- INTERNATIONAL

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EDS

	FY 85	FY 76	FY 77
REVENUES	124	133	164
PROFITS (IBT)	27	27	29

($ MILLIONS)

INDUSTRY
- MEDICAID, CHAMPUS, MEDICARE
- INSURANCE (HEALTH AND LIFE)
- BANKING & CREDIT UNIONS

SERVICES
- FM
- SOFTWARE DEVELOPMENT/SALES

NOTES
- PROGRAM MANAGEMENT MEDICAID
- INTERNAL GROWTH ONLY
- SUCCESSFUL AGAIN
- EMPHASIZING RFM
- INTERNATIONAL (IRAN ETC.)

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MCAUTO

EXTERNAL REVENUES	• $77 MILLION 1976 • $52 MILLION 1977 (6 MONTHS)
INDUSTRY SPECIALIZATION	• HOSPITAL SYSTEMS • MANUFACTURING - N/C - IMS BASED PRODUCTS • UTILITIES
SERVICES	• FM - $35 MILLION • RCS AND BATCH (SCIENTIFIC AND ENGINEERING)
NOTES	• SUCCESSFUL AEROSPACE SPINOFF • HOSPITALS $50M OF BUSINESS • 5100 ON-LINE TERMINALS • TOTAL COMPANY REVENUES $190 MILLION IN 1976 • EXTERNAL REVENUES GROWING MUCH FASTER THAN INTERNAL, AND NOW EXCEED 50% OF TOTAL

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CDC DATA SERVICES

SEGMENTS	•	PROCESSING SERVICES		$250 MILLION
		- SBC/CDC	190	
		- APPLICATION SERVICES	60	
	•	PROFESSIONAL SERVICES	42	
	•	ENGINEERING SERVICES (MAINT.)	178	
	•	EDUCATION SERVICES	130	
		TOTAL		$500 MILLION
SPECIALIZATION	•	MANUFACTURING, (CDC)		
	•	UTILITIES (CDC)		
	•	BANKS, CREDIT UNIONS, BROKERS (SBC)		
	•	GOVERNMENT (CDC)		
	•	RADIO & TV AUDIENCE RESEARCH (ARBITRON)		
	•	SRI MEDICAID/MEDICARE		
SERVICES	•	ALL TYPES		
	•	SBC (GENERAL BUSINESS, UTILITY, SPECIALTY)		
	•	EDUCATION (PLATO, CDI)		
NOTES	•	DIVERSIFIED		
	•	COMMERCIAL CREDIT		
	•	COMBINING SERVICES APPROACHES		
	•	INTERNATIONAL		

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(GENERAL ELECTRIC - INFORMATION SERVICES BUSINESS DIVISION)

EXTERNAL REVENUES $120 MILLION IN 1976

SPECIALIZATION
- EXTENSIVE NETWORK
- UTILITIES, CPA FIRMS, BANKING, FEDERAL GOVERNMENT
- PIGGY-BACKED SOFTWARE AND SERVICES

SERVICES
- INTERACTIVE-REMOTE COMPUTING
- REMOTE FM

NOTES
- 100,000 MILE NETWORK IN NORTH AMERICA: 100 CITIES OVERSEAS
- $30 MILLION PAID TO OVERSEAS AUTHORIZED DISTRIBUTORS IN 1976 (NOT INCLUDED IN $120M)
  - HONEYWELL MARKETS IN EUROPE
  - GE-DENTSU MARKETS IN JAPAN

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ITEL DATA SERVICES

1973	1974	1975	1976	1977
12	17	26	42	80

$ MILLIONS

INDUSTRY SPECIALIZATION

- TRANSPORTATION
- AUTO DEALERS
- CREDIT UNIONS, BANKS, INSURANCE COMPANIES

SERVICES

- GENERAL BUSINESS
  - BATCH
  - RCS
- SCIENTIFIC AND ENGINEERING
  - UNA
- TAX
- INDUSTRY SPECIALTY
  - DATA BASE
  - ABOVE INDUSTRIES

NOTES

- FASTEST GROWING MAJOR VENDOR
- ACQUISITIONS
- 1200 CUSTOMERS
- STRONG FINANCIAL SUPPORT

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TYMSHARE

	FY 74	FY 75	FY 76
REVENUES	53	64	82
PROFITS (IBT)	7	10	13

($ MILLIONS)

SPECIALIZATION
- TAX
- MEDICAL
- TRAVEL
- BANKING
- PETROLEUM

SERVICES
- INFORMATION SERVICES
  - RCS (UTILITY - DBMSS)
  - SPECIALTY (PETROCHEMICAL, ETC)
- INDUSTRY SERVICES
  - BATCH (GENERAL BUSINESS)
  - SPECIALTY (TAX, MEDICAL, TRAVEL, FUEL, CATV)
- SOME SOFTWARE AND MAINTENANCE

NOTES
- TYMNET
- 20% GROWTH & ACQUISITIONS
- FOREIGN JOINT VENTURES
- WSBA ACQISITION

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OTHER VENDORS

- ANACOMP
  - $16 M YEAR END 6/77 (26% GROWTH)
  - ACQUISITION ORIENTED
  - COM/NCR
  - BANKS AND THRIFT, GOVERNMENT
- BCS
  - $35 MILLION EXTERNAL
  - ERDA FM CONTRACT FM
  - RCS MULTIPLE CENTERS
  - SMALL SPECIALTIES
- COMNET
  - AGRESSIVE
  - $40M CONTRACTS FOR 3/4 YEARS
- COMPUSERVE
  - $12 MILLION
  - DEC 10 UTILITY
- COMSHARE
  - $18M YEAR END 6/77 (32% GROWTH)
  - HUMAN RESOURCES
  - ACCOUNTANTS
  - N/C WITH MDSI
- DUN AND BRADSTREET
  - NEW ENTRY
  - ACQUIRING MEDICAL COMPANIES

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OTHER VENDORS

- INSCO
  - $40 MILLION (90% CAPTIVE)
  - INSURANCE, UTILITY
- ON-LINE SYSTEMS
  - $16M FY 1977
  - 33% GROWTH
  - GOVERNMENT 'PROBLEM'
- OPTIMUM SYSTEMS
  - 7/76 $35M
  - LOS SOME GOVERNMENT BUSINESSS TO COMNET
  - BANKING WITH COMPUTER CONGENERICS
  - MANUFACTURING, MEDICARE, CITY GOVERNMENT, FEDERAL GOVERNMENT
- PRC
  - REORGANIZED/RELOCATED
  - $148 MILLION 1977
  - INFORMATION SCIENCES; FEDERAL GOVERNMENT, MEDICAID, STATE GOVERNMENT
  - DATA CENTERS
  - REAL ESTATE (REALTRONICS)

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OTHER VENDORS

- UCS
  - $34 MILLION IN 1976
  - ACQUIRED FORESIGHT SYSTEMS, ITS
  - GETTING CRAY COMPUTER
- UCC
  - $62 MILLION IN 1976 (50% ABROAD)
  - 4,000 CUSTOMERS
  - RESURGENT S&E DIVISION
  - EMPHASIZING BANKING SOFTWARE
- WESTERN UNION
  - NATIONAL SHAREDATA 1976 $27M (UP 24%)
  - TELSTATE $5.5M (UP 90%)
  - DISTRONICS $2.2M

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VII. SUMMARY AND RECOMMENDATIONS

KEY CONSIDERATIONS FOR SERVICES COMPANIES-1

MARKET/TECHNOLOGY

- INDUSTRY SPECIALIZATION (IS GETTING MORE EXPENSIVE)
- IMPACT AND OPPORTUNITY FROM LESS EXPENSIVE HARDWARE
- PRICING: HARDWARE VS. PROCESSING SERVICES
- OPPORTUNITIES IN NEW COMMUNICATIONS OPTIONS
- CONSUMER MARKETS FOR SERVICES
- MERGING DATA/TEXT/GRAPHICS/VOICE
- CHANGING USER BUYING POINTS
- STATUS, GROWTH, DIRECTION OF DISTRIBUTED PROCESSING

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KEY CONSIDERATIONS FOR SERVICES COMPANIES-2

MANAGEMENT

- GOVERNMENT REGULATION/TAXATION
- ACQUISITIONS AND/OR INTERNAL GROWTH
- DOMESTIC AND/OR OVERSEAS EMPHASIS
- PERSONNEL RECRUITING/TRAINING/RETENTION
- ORGANIZATION STRUCTURE
- NATURE OF FUTURE BUSINESS

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COMPUTER SERVICES VENDOR DEVELOPMENT

- NEW OPPORTUNITIES REQUIRE SIGNIFICANT DEVELOPMENT

- HAVE SAME PROBLEMS AS USERS
  - MAINFRAME CHOICE
  - MINI/MIDI/MAXI
  - SOFTWARE
  - PEOPLE SPECIALIZATION

- ADDITIONAL PROBLEMS OF MARKETING AND SALES

- MUST USE OWN TECHNOLOGY AND TOOLS

- SELECT TARGET AREAS FOR SPECIALIZATION

- PROTECT CUSTOMER BASE.

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VIII. CONCLUSION: INPUT IN 1978

1978 MAS TOPICS PREFERENCE -- CLIENT RESPONSE TO QUESTIONAIRE

VERTICAL INDUSTRY STUDIES

1. Medical
2. Insurance
3. Utilities

Note: There Was Also High Interest In Federal Govt. And Banking. Reports In Each of These Areas Will Be Done In The 4th Quarter Of 1977.

CROSS INDUSTRY STUDIES

1. Financial Planning Services
2. Data Base Management Software
3. EDP Plans and Budgets for 1978
   (perhaps including hardware aspects)

IMPACT STUDIES

1. Realities of Distributed Processing
2. Trends in Services Pricing
3. Acquisition Strategies
4. Profit Potential in Marketing Hardware
5. Technology Impact on Input/Output Equipment, Services
6. Why Users Buy Computer Services

A total of 4 topics to be selected in October '77 for implementation in the first half of 1978. An additional 4 topics to be selected by April 15, 1978 for implementation in the second half of 1978.

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1978 CAMP ENHANCEMENTS

- COMPUTERIZED DIRECTORY

  -FASTER UPDATING
  -POTENTIAL FOR INTERVIEWING

- COMPUTERIZED SELECTIONS OF COMPANIES

  STANDARD

  -APPLICATION
  -INDUSTRY
  -MODE OF SERVICE
  -GEOGRAPHIC AREA

  SPECIAL

  -SIZE
  -TYPE OF MAINFRAME HARDWARE
  -NUMBER OF EMPLOYEES
  -PUBLIC VS PRIVATE

- EXPANDED HIGHLIGHTS

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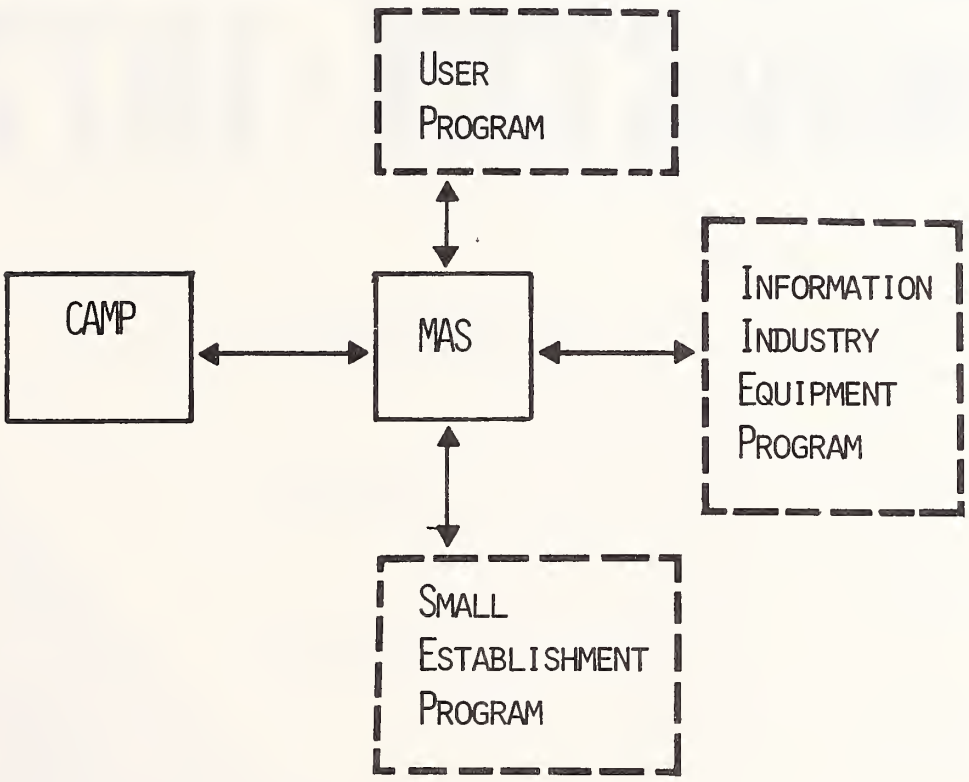
NEW 1978 ACTIVITIES UNDER EVALUATION



BASIC REQUIREMENT - ANY NEW PROGRAM MUST BE SELF-FUNDED AND SELF-STAFFED.

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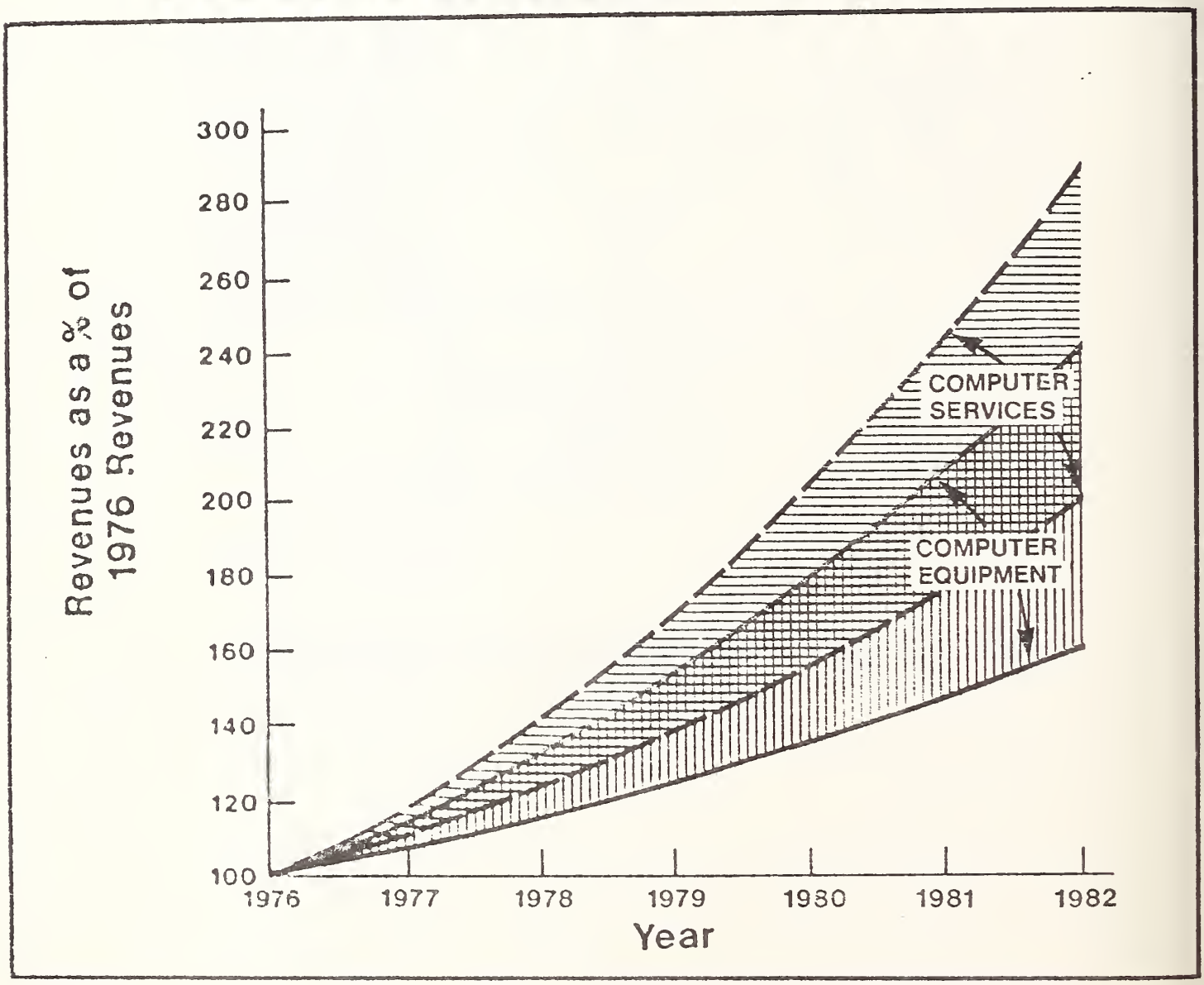
A NEW REPORT FROM INPUT...

OPPORTUNITIES FOR INVESTMENT IN THE COMPUTER SERVICES INDUSTRY - 1977



"AN INDISPENSIBLE GUIDE FOR INDUSTRY ANALYSIS"

SAVE $200. SPECIAL INTRODUCTORY PRICE OF $295 GOOD UNTIL DECEMBER 31; 1977

SECOND HALF 1978 TARGET

☐ INTERNATIONAL

☐ WESTERN EUROPE

☐ CANADA

☐ JAPAN

IF U.S. CLIENTS WANT IT

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